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1 Introduction

This report is Part 3 (of 6) in a specialist technical study on archaeological resources, produced as part of the Environmental Impact Assessment for Crossrail. It covers the proposed Crossrail route between Stratford in the west and Shenfield in the east, and contains an archaeological overview of that route section, plus detailed assessments for individual Crossrail sites along it. A full introduction is included in Part 1 of this technical report, which should be referred to for details of the background to the project, project description, structure of the technical report, and methodology.

The potential impacts of the proposed works in this route section on archaeological remains would be mitigated by preservation by record. There are no significant residual impacts from this route section.
2  Route overview

For an explanation of the purpose and structure of the route overview, see Part 1 of the archaeology technical report, section 1.6.5. Note that because of changes in the project boundaries, the western end of the North-East (Shenfield) route section, and Site 301 Stratford, lie in Zone E of the Central route section, which is therefore repeated here.

2.1  Zone E: The Lea Valley (north)

Route window C13, C13A, NE1
Central Route Section: Sites 236 Pudding Mill Lane Portal, 239 Hackney to Abbey Mills and Wick Lane Sewer Diversion
Shenfield Route Section: Site 301 Stratford

2.1.1  Boundaries and layout

The zone begins at the western edge of the Lea Valley, marked by the edge of the alluvial floodplain, 25m east of the Blackwall Tunnel northern approach road (NGR 537550 183320). It ends at the eastern limit of the historic Stratford settlement, around Water Lane/Leytonstone Road (NGR 539251 184962). This zone covers the boundary between the Central and North-East route sections. The zone runs through archaeological priority zones designated by the London Boroughs of Hackney, Tower Hamlets, and Newham.

2.1.2  Topography and geology

The majority of this zone is comprised of the alluvial flood plain of the River Lea, but it extends c 600m up the gravel terrace on the eastern side of the valley. The floodplain consists of Holocene alluvium over post-glacial Shepperton Gravels.

Recent work (the Lea Valley Mapping Project) has reconstructed the Pleistocene and early Holocene horizons beneath the alluvium. The Late Glacial/Pleistocene deposits were cut by the main and subsidiary channels of the Lea, and by its tributaries, including a channel which ran across the area of the proposed Pudding Mill Lane portal. An irregular topography would have existed in that part of the western side of the valley for much of the Holocene, with ‘islands’ of higher gravel and deeper hollows or channels. Some of the Pleistocene channels may have been followed by Holocene rivers, but in general the portal area appears to have been ‘abandoned’ by the main axis of water flow through this part of the Lea Valley during the Holocene. This is likely to have been a marshy wetland area, producing marsh or peat deposits, which are known to be extensive in this area in comparison to surrounding parts of the Lea Valley.

On the eastern side of the valley, a low gravel river terrace extends from the area of Stratford Langthorne up to Temple Mills, including the area of Stratford Station. This is thought to represent a part of the valley floor that was not reworked at the end of...
the last cold stage, and would have remained dry land for much of the Holocene. The majority of the area may not have been wetland until the historic period. There is evidence for this river terrace being cut by a Holocene palaeochannel, which may have had small areas of wetland associated with it. These gravels have potential for the preservation for ‘Arctic Beds’ or other Late Pleistocene organic deposits within or beneath the gravel, such as those recently recovered to the north, providing information and dating about parts of the Devensian cold stage as yet poorly understood.

The Lea Valley has a high potential for ‘geoarchaeological reconstruction’ to understand the changing topography and landscape, and its significance for past human activity.

2.1.3 Archaeological and historical background

Hunter-gatherer landscape (c 500,000 BP – 6500 BC)

The River Lea adopted its present course about 0.5 million years ago, and its floodplain was created at the end of the last glaciation (about 10,000 – 15,000 years ago). The Shepperton gravels were deposited in this floodplain, forming a network of braided channels with sand and gravel bars and larger, lake-filled hollows that would have been present when the earliest post-glacial (Late Upper Palaeolithic – Early Mesolithic) people colonised the area.

Very little evidence for the dry Early Mesolithic land surface is likely to be preserved, as evidence for soil formation would easily be overprinted and obscured by later flooding of the valley. Nevertheless, if it survives locally, this landscape would have good potential for archaeological remains, especially in areas close to watercourses and around lake hollows. Mesolithic hunter-gatherers frequently appear to have made use of such locations as temporary camps, and rich Early Mesolithic assemblages have been found in similar deposits and landscape positions elsewhere (for example within the Lower Colne Valley).

Overall archaeological potential: low

Wetland, later Mesolithic to Iron Age (c 6500 BC - AD 50)

During the Holocene (the past 10,000 years) the level of the sea rose with respect to that of the land, and a wetland environment of estuarine salt marsh and mudflats progressed upstream, depositing alluvium on the valley floor. Later Mesolithic activity is well-known from peat deposits in the Rammey Marsh to Broxbourne area, further upstream in the Lea Valley. By the Neolithic, most of the area had probably become wetland, which by comparison with the valley floor of the Thames would probably have been covered by peat deposits, forming a mosaic of different environments supporting a wide variety of human activities.

During the later Mesolithic the valley would have taken the form revealed at Millmarsh Lane, Enfield, where peat and alluvial sequences were excavated in buried former channels of the River Lea. The earliest peat produced a radiocarbon date of
7420–7050 BC (early Mesolithic) and an assemblage of 120 struck flints. This material was sealed by another organic-rich sediment which was dated to the late Mesolithic.

The margins of the higher areas and the interface of the wetland with the valley side are sometimes associated with timber structures, particularly trackways. Higher up the Lea, timber structures have been interpreted as Bronze Age or Iron Age crannogs: artificial settlement platforms in a lake or marsh. There is thus some potential for such structures.

During this period an increasing density of agricultural settlement will have been taking place on the terrace gravels on either side of the valley. Recent archaeological work has demonstrated the presence of a thriving Bronze Age community which relied on the Lea Valley for agriculture and trade. At Rammey Marsh, 180m of Middle to Late Bronze Age activity was excavated along the western bank of a buried channel. Ditches belonging to field systems were found, as well as pits, postholes, a droveway, worked timbers and artefacts. An Iron Age roundhouse together with pits and postholes was excavated within a ditched enclosure, and represents later occupation of the site.

Items of prestigious metalwork from both the Bronze and Iron Age periods found in the Lea may have been deliberately deposited in the water, and reflect ritual deposition in sacred watery places. They include Bronze Age spearheads and a shield from the Lea Marshes together with swords dating from the Middle Bronze Age.

Prehistoric occupation was also found by the Salmons Brook, just one of the tributary streams that empty into the Lea. The gravels here were overlain by a brickearth capping which would have provided well-drained, fertile farming land with access to higher land to the north and water to the south. The Lea floodplain and the Salmons Brook would have been attractive resources for fishing and fowling. Late Neolithic and Bronze Age ditches, representing field systems with postholes and pits were found at Plevna Road, Edmonton. Subsequent activity into the Later Bronze Age and Iron Age comprised two parallel ditches, small enclosures and pits as well as a substantial post structure.

More importantly, excavations at the Stratford Market site (sitecode HW-OP91) point specifically towards settlement from the Late Bronze Age and Iron Age, including late Iron Age human and animal burials. Recent excavations at the CTRL Stratford Box (sitecode SBX00) revealed waterlogged timbers of Bronze Age and Iron Age date on the river gravels, including possible off-cuts from timber working.

**Overall archaeological potential: high.**

*Roman hinterland and infrastructure (c AD 50 – AD 450)*

The Lea is likely to have continued as an important trade route in the Roman period, for example supplying London with agricultural produce from the organised villa system inland and, in the later part of this period, with pottery from Much Hadham, via the River Stort. This zone is also traversed by the Roman arterial road from *Londinium* to *Camulodunum* (Colchester).
On the higher ground to the west and east of the zone, a pattern of occupation has been identified from recent excavations suggesting buildings fronting the road, with a network of yards and fields behind. The road may well have been carried onto the marshy ground of the Lea valley on a causeway, crossing the river itself via a ford or possibly a timber bridge. The projected road line passes close to one of the Crossrail sites.

East of the Lea, the Roman highway probably follows the line of Romford Road in Stratford, where a section, assumed to be Roman by virtue of its position directly above natural gravels, was observed in 1963 in front of the Passmore Edwards Museum.

Other Roman evidence is limited to field systems (e.g. a ditch at 2–6 New Mount Street dated to the 4th century AD) and it is not clear whether there was a settlement at Stratford.

**Overall archaeological potential: moderate.**

*Increasing settlement and resource exploitation (c AD 450 – 1500)*

There is both historic and archaeological evidence for Saxon activity in the zone. The Crossrail route crosses the Channelsea river, an artificial tributary of the Lea, reputedly dug c. 895 by Alfred as part of the fortification of London against the Danes. Saxon finds associated with managing the Channelsea include a timber revetment of driven stakes with associated leather waste and late Saxon pottery from excavations for the Jubilee Line at Stratford Station, and a late 7th/8th-century bridge abutment or jetty comprised of timber piles and a masonry superstructure, found in excavations in the Lea floodplain for CTRL (Stratford Box). Evidence for the revetment of the river banks in the form of a bundle of wound wattle rods and a wattle hurdle was also recovered, as well as other Early to Late Saxon timbers.

Log boats have been recovered from four sites in the Lea, up to 5m in length. One, from Clapton in Hackney, was dated by tree-ring analysis to the late Saxon period, AD 950–1000. It had sunk in a channel of the Lea which subsequently silted up. Plant seeds from wet and muddy environments, pieces of willow, hazel and oak, pollens and several species of molluscs were all found in silts within the boat.

The Domesday survey of 1086 notes nine mills on tributaries of the Lea at Stratford, although there is no clear reference to a settlement here and little direct occupation evidence has so far been found in the modern town centre. The place name, meaning *forthing place on the old street*, indicates its role as the first stopping place on dry ground on the Essex side of the Lea valley, at the crossing point marked by the Roman road line from Old Ford Road (Bow) to Romford Road (Stratford).

However, from the early medieval period Stratford ceased to be a single focus. Around 1100, the original road line was diverted further south, away from the Crossrail route, when one of the first arched stone bridges since the Roman period was constructed between Stratford and Bow to the west of the Lea and Stratford Langthorne on the Essex side, the new route marked by High Street Stratford. This
major engineering project, which preceded London Bridge by some 80 years, illustrates the strategic transport and trade importance of the river crossing. It opened the way for the construction of a Cistercian abbey at Stratford Langthorne around 1135 near modern Abbey Road, more than 1km south of the Crossrail route. This project would have involved extensive reclamation and drainage works on the Stratford marshes, as the floodplain within the estate lands provided fertile pasture and cultivation. The Cistercians also continued the exploitation of the water power of the braided Lea channels for mills (hence Abbey Mills).

From the medieval period onwards large scale production to supply London took place around Stratford. Cattle were brought from Essex to the slaughter houses, which were banned from London in the 14th century. Similarly, corn was milled and baking took place on a commercial scale, using wood from Epping Forest, in an area exempt from City regulations.

**Overall archaeological potential: high.**

**Post-medieval industry (AD 1500 – present)**

Industry developed along the banks of the Lea in the 17th and 18th centuries; including silk weaving, calico printing, Bow porcelain (using bone from the slaughter houses), brewing, and gunpowder manufacture. The Metropolitan Building Act of 1844 restricted the operation of noxious industrial processes in London and Middlesex, and as a result many moved over the Essex border into the Stratford area, including rendering animal carcasses for tallow, soap and glue; chemical plants for acids and printing inks; distilleries, and paint and varnish factories. Most were on former marshland within the river valley, north of the Crossrail route, although Bazalgette’s Northern Outfall Sewer built in the 1860s from London to Abbey Mills Pumping Station, intersects the route.

Industrial and residential development was given impetus by the arrival of the Eastern Counties Railway (ECR), one of London’s earliest. The first section, from the Shoreditch terminus (re-named Bishopsgate in 1847) to stations at Stratford, Ilford, and Romford was operational in 1840 and extended to Colchester in 1843. It branched at Stratford onto the Northern and Eastern Railway, northwards along the Lea valley to Broxbourne (also opened in 1840 and part of the ECR Cambridge line from 1844). The Eastern Counties and Thames Junction Railway opened south from Stratford to North Woolwich in 1848, and an ECR loop across the Lea valley to Victoria Park was added in 1854. The links between these various lines created a major railway intersection at Stratford, around which (from 1845) the “railway king” (and ECR chairman) George Hudson developed the extensive marshalling yards north of Stratford station, known as the Rail Lands. When amalgamation created the Great Eastern Railway in 1862, Stratford became the company’s main depot. It eventually covered 100 acres and employed 6000 people in all aspects of railway supply and maintenance, including the manufacture of locomotives and rolling stock. The vast layout of sidings, loops, junctions, engine houses and workshops here, at the height of railway expansion, is shown on Stanford’s map of 1862 and the 1894 Ordnance Survey.

**Overall archaeological potential: high.**
2.1.4 Selected research themes


- Understanding the significance of geomorphology, ecology, ecosystems and climate, hydrology, and vegetational and faunal development, on human lives. (79).
- Understanding London’s hydrology and river systems and tributaries … and the relationships between rivers and floodplains. (79).
- Understanding the relationship between landscape, river and settlement, and the influences of the Thames in particular on communications and social interaction. (79).
- Examining the success with which small towns in the London region adapted to the capital’s growth. (81).
- Understanding the reasons for evolution of the road systems, street layouts, river crossings and ferries, and their importance as engines of development and change. (82).
- The Mesolithic/Neolithic transition: understanding the significance of horticultural experimentation at this time, and the transition from hunter-gatherers into farmers. (83).
- Understanding the nature and meaning of the deposition of metalwork in the Thames and at the headwaters of river tributaries. (86).
2.2 Zone A: East of Stratford to Goodmayes

Route windows NE1 (part), NE2–7
Sites 303 Forest Gate, 304 Manor Park, 318 Aldersbrook Sidings, 305 Ilford, 306 Seven Kings, 307 Goodmayes, 308 Chadwell Heath

2.2.1 Boundaries and layout

The zone begins at Maryland on the outskirts of Stratford, around Water Lane (NGR 539251 184962), the historic route north to Leytonstone, and proceeds east, crossing the valley of the river Roding between Manor Park and Ilford, to the modern outskirts of Romford. Here the boundary between two London Boroughs; Barking and Dagenham, and Havering (NGR 549083 187843) also represents the historic eastern limit of Hainault Forest at Marks Gate.

The common feature of the zone, around which the majority of settlements and land use will be orientated, is the main Roman and later road from London to Colchester. A similar pattern is seen in later ribbon development attendant on the Victorian railway, which follows much the same route. The prehistoric landscape and its prominent features (such as the Iron Age fort at Uphall Camp, Ilford) are an obvious exception and will be influenced by key natural features, particularly where they form topographic boundaries and by exploitable resources, for example the valley of the River Roding and the agricultural potential of the gravel terraces.

2.2.2 Topography and geology

As the Crossrail route progresses eastwards it mainly crosses the Hackney and Taplow Thames terrace gravels. East of the Roding and Ilford the terrace gravels are capped in places by Brickearth deposits of the Ilford Silt formation.

The terrace gravels are cut by the valley of the Roding, a major Thames tributary, the base of which is filled by alluvium. Two smaller streams, the Loxford and the Mayesbrook, run south-westwards into the Roding towards Barking Creek. No alluvium associated with the two subsidiary streams is mapped by the BGS, but the Mayesbrook valley is filled by Head deposits between Goodmayes and Chadwell Heath.

2.2.3 Archaeological and historical background

Scattered hunter-gatherer activity (c 500,000 BP – 4000 BC)

In the 1850s the bones of at least 100 mammoths and 77 rhinoceri, together with straight-tusked elephant, lion, brown bear and the giant deer *megaloceros* were collected in Ilford. In 1863 the skull of the ‘Ilford mammoth’ was unearthed, the largest from Britain. The finds were made during brickearth quarrying, principally at Uphall Pit on Ilford Lane c 500m south of the Crossrail route, but also in quarries much closer to the railway, on both sides of Ilford High Road, towards Seven Kings. For example, the 1882 Ordnance Survey map shows quarries on both sides of the railway (north of the junction of High Road and Green Lane), the map is annotated.
'fossil remains found here.' However, not all the pits are mapped, having by then been filled in and built over. In 1984 further bones of mammoth, ox and rhinoceros were discovered during construction of the Ilford Southern Relief Road. Such animal remains have good potential for providing further evidence of the reconstruction of past landscapes.

These remains are derived from the Ilford Sands and Silts, not the similarly named Ilford Silts which in places form the overlying ‘brickearth’ deposit. The Ilford Sands and Silts are a fine grained deposit, located at the junction of the coarser material of the two gravel terraces present in this area, identified on BGS mapping as the Taplow and Hackney gravels, although other authors have made different identifications (eg Mucking and Corbett’s Tay). Such conditions may occur on the Crossrail route at Manor Park station, where faunal remains have been found nearby at Carlyle Road, although the dating of these is disputed: they may be of Mesolithic date), and also at Seven Kings station. The Ilford Sands and Silts are likely to be better preserved where they are sealed by the brickearth of the Ilford Silts, eg between Ilford and Seven Kings, and in more localised deposits east to Chadwell Heath.

Few of these faunal remains have been found in association with Palaeolithic artefacts, but a scatter of flint implements, mostly hand axes, has been found in the Roding valley. Many of the artefactual remains are likely to have been reworked in the terrace gravels, or from the lower part of the brickearth. The Hackney terrace has also exhibited such potential to the west of Zone A, in Stoke Newington, where flintwork was present within a palaeochannel cutting the gravels. Any direct association of artefacts with faunal remains would be of considerable importance.

There is also scattered cultural activity in the Roding valley, for example 32 Palaeolithic hand axes, six retouched flakes and three touched flakes discovered in the 19th century at St Swithin’s Farm, Barkingside.

Head deposits may also seal Palaeolithic sites, and are present along the Mayesbrook stream. River valleys containing post-glacial (Holocene) alluvium have a similar potential for more recent prehistoric remains, in particular those of the Mesolithic period, which is only otherwise represented by two stray finds on the gravel terraces.

Overall archaeological potential: moderate in any areas at the junction of the two gravel terraces (where Ilford Sands and Silts may be present, especially where sealed by brickearth), or of brickearth, Head Deposits, alluvium, or Hackney Gravels, and not previously quarried.

Settlement and farming (c 4000 BC – AD 50)

Evidence for the first settled Neolithic farming communities is sparse, but redeposited Neolithic flintwork was excavated at Uphall Camp, and a polished stone axe has been discovered in the Ilford area.

Traces of Bronze Age activity include a clay loom weight from St Swithin’s Farm Barkingside, an arrowhead from Windsor Road, Wanstead and a scatter of redeposited artefacts (including a fragment of funerary urn) from Uphall Camp. Fragments of Late Bronze Age and Late Iron Age pottery and flint artefacts from Kinfauns Road, Goodmayes were probably also redeposited. A prehistoric barrow has
been suggested, south of the line between Ilford and Seven Kings, near the modern
cemetery. These finds suggest a background potential for Bronze Age settlement in
the zone, comparable to that on gravel terraces elsewhere along the Thames estuary,
although no clear archaeological evidence has yet been found.

Uphall Camp, Ilford (c 1.2km south of the Crossrail route) formed part of a large
defended enclosure of hillfort type, the largest in the region. Excavations in the 1960s
and 1980s revealed a diverse range of Middle Iron Age (mid 3rd- or later 2nd-century
BC to mid 1st-century BC) structures including roundhouses, post-built granaries,
stock compounds and smaller rectangular sleeper-beam sheds. This extensive
settlement, adjacent to the historically navigable River Roding, would probably have
acted as an important political and mercantile centre for much of the lower and middle
Thames valley.

Further traces of Iron Age settlement in the Roding valley were found at Goodmayes
Hospital, Ilford, where features included a boundary ditch, enclosing at least two
structures with post holes, slots and pits.

**Overall archaeological potential: moderate**, for Iron Age occupation focused on the
Roding valley. **Low** elsewhere.

**Roman infrastructure and related activities (c AD 50 – 450)**

The road through the zone was probably laid out in the early 1st century, as one of the
first main transport routes of Roman Britain, linking the strategic military objective,
the Iron Age tribal centre and Roman *colonia* at *Camulodunum* (Colchester) with the
newly emerging port and political centre *Londinium*. The projected line along
Romford Road and Ilford High Road passes close to the railway within this zone,
increasing the potential for remains of the metalled carriageway itself, the two main
roadside ditches, or related activity beyond. At Ilford station, the railway is c 300m to
the north, but the routes then converge, intersecting around Seven Kings station, with
the railway still close as far east as Goodmayes station, where it lies a similar distance
south of the road. Excavations adjacent to Romford Road have revealed sections of
the Roman road and other associated features.

Where the related activity includes settlements there is the potential for roadside
cemeteries, but there is little such evidence from this zone. A probable inhumation
and cremation cemetery was found in the 18th century in Valentines Park, some
1.5km north of Ilford Station and the Roman road. It is therefore more likely to have
been associated with a settlement further away from the road.

Gravel extraction at St Swithin’s Farm, Ilford produced much Roman pottery
including a cinerary urn and building material suggesting another cemetery and
possibly a settlement. The occupation of Uphall Camp continued into the Roman
period with an enclosure, field boundaries and a possible cremation.

Evidence for Roman rural land use is less certain. Excavations at St Mary’s Church,
Ilford produced some Roman material redeposited in later contexts, and Roman tile or
brick was incorporated into its structure. This may imply a farm or larger villa estate
in the area, as manuring frequently left a background scatter across the field system around such sites.

**Overall archaeological potential: moderate**, where the Roman road is close to the railway.

**Villages and manorial estates (c AD 450–1600)**

Much of the area east of Stratford and north of the old Roman road was royal hunting forest from the later part of the Saxon period. Forest Gate took its name from the barrier across Woodgrange Road to stop livestock straying onto the main Romford Road highway, from the common grazing of Wanstead Flats, bordering the river Roding, and from Hainault Forest, to the north. Wood Grange manor is first referred to in 1189 and the house is still shown on Norden’s map of 1594, close to the Crossrail route. It was part of the estates of William de Montfichet, the founder of Stratford Langthorne Abbey and may have formed part of the original land endowment to the abbey in 1135. At the opposite eastern end of Hainault Forest is Marks Gate, the medieval moated site Marks Hall and the Marks and Havering stones, forest markers set up following a royal survey in 1641 and intended to curb unauthorised woodland clearance. The boundary markers and gates also had a legal status, the hunting grounds being subject to royal jurisdiction and strict forest laws.

The principal late Saxon and medieval settlements were along the main road, generally where it crossed rivers, with forest and heath to the north and more agricultural land to the south. Between the two forest gates lay the settlement at Ilford, on the old Roman road beside the river Roding. Originally it was on the west side of the river valley at Little Ilford (now Manor Park). Here *Ilefort, “ford through the Hile” [Roding]* is first mentioned in Domesday, as a hamlet with a population of 10 and even by the Parochial Inquisition of 1650 there were still only 10 or 11 families. It was part of a Saxon estate of approximately 133 hectares, requiring 4.5 plough-teams, declining to 2 teams in 1086. It had woodland for 20 swine and 20 acres (8 hectares) of meadow. Investments by the new Norman owner included a mill and fishery on the Roding but again by 1135 the manor had been given to Stratford Abbey.

A bridge is first recorded in the 14th century and it probably stimulated the growth of Great Ilford on the east side of the river, which became the modern town. Here the lands belonged to Barking Abbey and in 1140 Abbess Adeliza founded a leper hospital, enlarged c 1180 by Abbess Mary Becket, the sister of St. Thomas Becket. The hospital, including the 14th century chapel, is c 90m south of Ilford Station and was endowed with 120 acres, a mill and substantial rights in the area. It remained a hospital after the Dissolution in 1536 and almshouses, successors to the lepers’ cells, were added in 1719. An excavation in the hospital forecourt in 1959–60 discovered the leper burial ground with 22 individuals within single intercutting graves.

To the east the Crossrail route passes through the medieval village of Seven Kings, first documented in 1285 (as *Sevekyngges*). However the place name may derive from *Seofecingas* (the settlement of the people of Seofeca) suggesting pagan Saxon origins. These early settlement names were often along the coast and rivers inland (eg *Barking* on the lower Roding, where hand-made Saxon pottery has been found) and it is
notable that the Loxford river, a tributary of the Roding, crosses the route to the east of Seven Kings station.

Goodmayes derives from the Godemay family, who in 1319 were leasing land from Barking Abbey, probably around a small farmstead settlement. A house is also documented from 1248: Green Lailford House. In 1777 the manor is referred to as Goodmath: it lay well south of the main road.

Chadwell Heath was a rural hamlet on the London to Colchester road (which runs north of the railway at this point) where it crossed an area of boggy heathland in Hainault Forest (known as Black Heath in 1440). The settlement is first documented as Chaudewell in 1254, the name meaning cold spring and as Chaldwell Strette in 1456. The 13th-century document also refers to the manor of Wangey (Wanghou) with a moated house, holding lands on both sides of the high road at Chadwell from Barking Abbey. In the early 17th century its estate comprised c 30 acres freehold and c 230 acres held copyhold from the manor of Barking. A map of 1652 shows Wangey House after the estate had been developed by the Harvey family in the Tudor period. The house appears to have been a large rectangular building with a tower.

The documentary evidence for large Saxon and medieval ecclesiastical estates along the old Roman road, with associated manor houses and hamlets is so far not well-evidenced in the archaeological record. Structural evidence for settlement at Goodmayes is limited to poorly preserved beam slots, dated to the 16th to 18th century, from Kinfauns Road, although excavation on the railway yards east of the station in 1991 revealed medieval features. Similarly, excavations on the site of Wangey House in Chadwell Heath failed to find the medieval building but they did record a 12th-century cultivation soil and earlier plough furrows. Excavations along the Romford Road have revealed medieval boundary ditches and plough soils and much of the zone remained as open fields well into the 19th century.

**Overall archaeological potential: moderate**, although this is not adequately reflected in the archaeological record.

**Country houses and suburban development (c 1600 – present)**

Until the arrival of the railways, the area remained largely rural, with scattered villages, estates and country houses, often the homes of wealthy London merchants. For example, Richard Lee who had made a fortune in Maryland and Virginia returned in 1658 and built a mansion, Maryland Point, shown on Oliver’s map of Essex 1696. It was north of the later Maryland railway station, on the road to Leytonstone. An associated village developed, eventually becoming a suburb of Stratford, and Defoe noted that 100 houses were built between 1700 and 1722.

South of the route, between Maryland and Forest Gate was the estate of Upton House/Ham House, of Tudor origins, but owned c 1760–1780 by John Fothergill the Quaker physician and botanist, who developed the grounds into ornamental botanical gardens to rival Kew. It was broken up in the 1850s for residential development, as was the medieval Woodgrange manorial estate on the opposite, northern side of the main Romford Road. Manor Park station is in the former gardens of a large house built c 1800–1810 for James Humphries, lord of the manor of West Ham.
Similarly at Chadwell Heath the medieval estate was bisected when the railway arrived in 1836–9. Here the old manor, Wangey House, was partly demolished to allow the later station to be built. A further part was taken down in 1901, when the station was enlarged and the remainder in 1937. The country estates were largely developed into ordered streets of suburban middle class villas along the railway and for municipal open spaces, such as cemeteries and public parks. However, east of the Roding much of the land is still shown as open on the 1894 Ordnance Survey, with brick fields, farms and market gardens, although on the outskirts of Ilford new streets were clearly being laid out.

**Overall archaeological potential: moderate**, where the railway is close to the country mansions and gardens.

### 2.2.4 Selected research themes


- Understanding the River Thames and its tributaries through the periods of prehistory and the relationship between the floodplains and the gravel terraces, and between inner and outer parts of the Thames Estuary and its tributaries. (19).

- Understanding how the relationship between hinterland and *territorium* of Londinium operated. (30).

- Defining the economic character of different parts of the region (and the region as a functioning whole) through time – focusing on production, consumption and distribution. (31).

- Identifying rural land use and the extent of agricultural exploitation. (47).

- Contributing to our understanding of the creation of the London suburbs, c 1500 to 1900. (69).
2.3 Zone B: Romford and Gidea Park

Route windows NE8–11
Sites 316 Romford Depot, 309 Romford, 310 Gidea Park, 315 Gidea Park sidings

2.3.1 Boundaries and layout

This zone, the valleys of the Rom and Ravensbourne rivers, begins at the eastern edge of the former Hainault Forest, marked by the borough boundary at NGR 549083 187843. It includes the medieval and later village of Romford, Gidea Park being its modern eastern suburb. The end of the zone is defined by the eastern side of the valley of the Ravensbourne river (approximately NGR 553900 190000).

The zone includes sections of the London Borough of Havering Areas of Archaeological Priority.

2.3.2 Topography and geology

In the western part of this zone, the land falls gently to the east towards the river Rom. The Crossrail route crosses the Rom at Romford, after which the land rises out of the river valley, passing along the southern edge of the relatively shallow valley of Black’s Brook, a tributary of the Rom and rising to the watershed with the Ravensbourne valley in the vicinity of Gidea Park station. From there, the land dips down again into the valley of the Ravensbourne, crossing that river at the site of the proposed Gidea Park sidings, before rising again to the north-east.

West of the Rom, the drift geology consists mainly of Hackney terrace gravels, which have been eroded by the river, so that the underlying London Clay is exposed in a narrow strip to the west of the river alluvium. East of the Rom valley, the Hackney gravels are overlain by Head deposits in the shallow valley of Black’s Brook. Here again, the terrace gravels have been eroded in places to expose the underlying London Clay, in a pattern suggesting that there were once several streams flowing into Black’s Brook.

On the higher ground to the east, in the area of Gidea Park, the London Clay is capped with the Black Park sands and gravels. These have been eroded to the east in the valley of the Ravensbourne, where Head deposits also fill much of the valley and London Clay is exposed elsewhere.

2.3.3 Archaeological and historical background

Hunter-gatherers and early settlement (c 500,000 BP – AD 50)

As with the previous zone, the river valleys (in this case the Rom, Ravensbourne, Black’s Brook, and other former streams suggested by the drift geology mapping) would have been attractive resources for exploitation by hunter-gatherers. Where present, Head deposits have potential to seal and preserve Palaeolithic evidence, and the post-glacial alluvium is likely to contain Mesolithic and later prehistoric features, especially where there is associated preservation of organic remains and palaeoenvironmental sequences.
Conversely, the well-drained soils of the terrace gravels would have provided an attractive location for early agricultural settlement, as suggested by crop marks (including two ring ditches) on both sides of the Crossrail route at Crowlands on the western side of the Rom valley.

An extensive excavation on the terrace gravels on the western side of the valley of the Rom has produced evidence for prehistoric settlement and activity across a variety of periods. Warren Farm lies some 1.3km from the Crossrail route and the proposed Romford depot, and like Gidea Park station lies on the Black Park Gravels. Late Neolithic or Early Bronze Age features containing pottery and flintwork suggested activity, perhaps occupation. This was followed by the construction of a large sub-circular enclosure, possibly a ring fort or similar, in the Late Bronze Age, which might have continued in use into the Early Iron Age, at which date there was settlement within the enclosure.

However, the immediate Romford area has produced only a few unstratified prehistoric finds: a Neolithic arrowhead from Linden Street and Iron Age or Saxon pottery from a ditch excavated at 210 South Street. In Gidea Park a single undated flint artefact was recovered from Repton Gardens, c. 200m south of the main road.

**Overall archaeological potential: moderate.**

*Roman infrastructure and related activity (c AD 50 – 450)*

The main Roman road between London, Chelmsford and Colchester passes through the zone (London Road and Main Road, Romford). West of Romford this line lies some 300 to 400m north of the Crossrail route, increasing to 750m in the area of Gidea Park. Based on the distribution of Roman finds, it is most likely to have run c. 500m to the north of Romford station, and eastwards up the modern market place in Romford town centre, probably along Romford High Street.

A documentary source, the *Antonine Itinerary*, places the Roman settlement of Durolitum 16 miles from Caesaromagus (Chelmsford) in the vicinity of Romford. This was probably a strategic military barracks and posting station rather than a fully fledged town. Although the Sites and Monuments Record (GLSMR 060704) notes a Roman fort to the north of the High Street, this is based on supposition rather than archaeological evidence. Nonetheless, Roman finds have been recovered from the centre of Romford, suggesting an organised presence, with a burial ground, in the area.

The multi-ditched rectilinear enclosure at Warren Farm, Romford (see above) may have had Late Iron Age origins or date to the early Roman period. Interpretations of its function vary between a stock pen and a sacred enclosure. Other Roman features at Warren Farm include a short section of gravel metalled local road and a building with flint foundations.

These finds suggest Roman settlement in the Romford area, but as yet its nature remains unclear. No such evidence exists for Gidea Park.
**Overall archaeological potential: moderate**, in the immediate vicinity of Romford and the river crossing.

**Increasing settlement, exploitation and urbanisation (c AD 450 to present)**

It is unclear whether the Romford settlement continued through the Saxon period. The village (the name derives from 'the wide [rum] ford') was part of a late Saxon royal estate, the Royal Manor of Havering (and as such, is not separately mentioned in the Domesday survey of 1086). It was however recorded in an early 11th-century charter of Edward the Confessor, and by the early 13th century Romford was increasing in population and economic importance, its status as confirmed by the grant of a market charter by Henry III in 1247 and the establishment of a church in 1323.

Much of this early medieval settlement lay south of modern Romford, close to the Crossrail route, in the Oldchurch area which was prone to flooding, being close to the River Rom (known as the *Merchdyche*, implying a manorial boundary). As a result, settlement migrated north towards higher ground along the old Roman road in the early 15th century, confirmed by the foundation of a new church there in 1406. Romford became the market for the area and an outlet for leatherware from the town’s tanneries. The open market place lay on the main road and was surrounded by shops, inns and dwellings.

Romford continued expanding throughout the post-medieval period, with many new houses being built during the 16th, 17th and 18th centuries. Large numbers of coaching inns served travellers between London and East Anglia (for example the 17th-century Golden Lion Public House). Excavations have revealed a 16th-century burgage ditch with evidence of tanning from the Market Place; and a 16th- or 17th-century ditch parallel to South Street. There was a Napoleonic barracks north-west of the station and Oldchurch Hospital, on the south side of the railway, originated as a workhouse. Industry along the Rom, such as leather works and brewing, continued to be important. Romford found prosperity in the 19th century with the arrival of the Eastern Counties Railway, the original station being opened in 1839. From 1850 onwards the expansion of Romford has been rapid, and the centre of the town has grown out of all recognition. The only buildings more than 100 years old are Golden Lion on the corner of High Street and North Street, and the Church House in the Market Place.

To the north-east of Romford, Gidea Park takes its name from the estate of Gidea Hall, in existence by 1250 and located on the east side of Black’s Brook, north of the hamlet of Hare Street which lay on the main Colchester road. From Hare Street, Balgores Lane (documented from the Tudor period) ran south and is intersected by the Crossrail route at Gidea Park station. North-east of the station is Hare Hall, a Palladian mansion of c 1768 on the site of a earlier house, Goodwins.

However, the main focus of settlement was the medieval and later village of Ardleigh Green (Badley Greene c 1618, probably deriving from the de Badele family, known in the area from c 1325). It lay around a small green just to the south-east of Gidea Park station, is shown as Squirrels Heath on Cary’s map of 1786, and was bounded to the east by the river Ravensbourne, marking the end of this zone. The 1777 Chapman and Andre map shows the area to the north, between what is now the railway and the main...
Colchester road, as predominantly fields. Here Gidea Park was founded as a garden suburb in 1911, later expanding south through Ardleigh Green towards Hornchurch.

*Overall archaeological potential: moderate.*

### 2.3.4 Selected research themes


- Understanding how the relationship between hinterland and territorium of Londinium operated. (30).
- Defining the economic character of different parts of the region (and the region as a functioning whole) through time – focusing on production, consumption and distribution. (31).
- Identifying rural land use and the extent of Saxon agricultural exploitation. (47).
- Understanding the nature and extent of medieval urban development, and the social and economic relationship of the core to its region. (58).
- Contributing to our understanding of the creation of the London suburbs, c 1500 to 1900. (69).
2.4 Zone C: Harold Wood to Shenfield
Route windows NE12–17
Sites 311 Harold Wood, 312 Brentwood, 313 Shenfield

2.4.1 Boundaries and layout

The western edge of the zone is defined by the eastern side of the valley of the Ravensbourne river (approximately NGR 553900 190000) and it runs north-east to the end of the Crossrail route at Shenfield, near Arnold’s Wood (NGR 562055 195920). This zone is centred upon the historic town of Brentwood, with Harold Wood and Shenfield forming its more recent satellites. Again, the linking feature is the old Roman highway, its route marked by Colchester Road (Harold Wood); London Road/High Street (Brentwood) and Shenfield Road/Chelmsford Road (Shenfield).

The zone includes part of a London Borough of Havering Area of Archaeological Priority. In Essex, Brentwood District Council has no archaeological priority zones: each site is considered on its merits.

2.4.2 Topography and geology

The western part of the zone consists of the valley of the Ingrebourne river and the side-valleys of its tributary streams. The river crosses the main road at Maylands golf course, beside the M25, as the Weald Brook, where it marks the eastern boundary of the Borough of Havering. From here it flows westwards, on the south side of the road, through Harold Wood, before turning south-west towards Hornchurch. In the opposite eastern direction, the Ingrebourne tributaries are cut into the western side of the hills of the Mid-Essex ridge on which Brentwood lies. These rise eastwards until reaching a point some 500 to 1000m east of Brentwood Station. To the north-east of this the land falls again towards the valley of the river Wid, which lies just beyond the end of the zone at Arnold’s Wood.

From Harold Wood to a point west of Brentwood, the dominant geological horizons are relatively small areas of sands and gravels, notably the Black Park, Boyn Hill, and Stanmore gravels, which have been eroded by braided channels to expose the London Clay over the majority of the valley of the Ingrebourne. Both alluvium and Head deposits are present along the course of the river and its tributary streams, with more extensive areas of Head south of the railway.

East of the Ingrebourne system, Brentwood lies on higher ground consisting of the Claygate member and Bagshot formation, capped with the Stanmore terrace gravels. The eastern slopes of this higher ground are cut by a multiplicity of former and current stream channels forming tributaries of the River Wid. The dry watercourses are often marked by Head deposits, notably in the area of Shenfield station, which is located at the junction of two of these palaeochannels.
2.4.3 Archaeological and historical commentary

Sporadic prehistoric activity (c 500,000 BP – AD 50)

As with previous zones, the proximity to rivers (in this case the Ingrebourne and Wid and their tributaries) would have made for an area attractive for exploitation by both nomadic hunter-gatherers and early farming communities. Again, the presence of Head deposits in these river systems indicates a background potential for Palaeolithic land surfaces sealed beneath them. Similarly, alluvial floodplain deposits are likely to contain organically preserved remains of Mesolithic and later prehistoric activity and associated palaeo-environmental sequences.

Despite this potential, the archaeological evidence so far is limited. Prehistoric finds are scattered, disassociated, and often not well-located. A Paleolithic hand axe was found at an unknown point between Brentwood and Tyler’s Common, and an unlocated polished Neolithic axe head, near Brentwood c 1872. Mesolithic worked flint tools and some Neolithic finds have also been found in the Brentwood area, and a hoard of Late Bronze Age axes could indicate later activity. The finds from Shenfield include three Palaeolithic hand axes which are now in the British Museum, although nothing is known of their discovery. The most significant prehistoric feature is the Iron Age hill-fort and settlement of South Weald Camp, which lies some 2km north of the Crossrail route.

Overall archaeological potential: Palaeolithic: moderate in Head deposits; Mesolithic: moderate within alluvium; later prehistoric: low, probably increasing to moderate within river valleys.

Roman infrastructure (c AD 50 – AD 450)

The predominant feature remains the highway from Londinium to Durolitum (?Romford); Caesaromagus (Chelmsford) and Camulodunum (Colchester). Two possible roadside ditches have been excavated at the junction of Spital Lane and Brook Street, Brentwood.

However, between these principal settlements there is presently little coherent evidence of occupation. The few poorly located finds include a gold ring with Christian monogram from the western end of the zone and tegulae (roof tiles), 4th-century pottery, a lava quern and a brooch from the Brentwood area.

Shenfield offers better potential, the area around the church (see below) having produced Roman tesserae, building material, and pottery. This has been interpreted as evidence for a building and suggests a Roman settlement close to the main road. Further away, Thornden Park (on the eastern side of the ridge some 3km south-east of Brentwood and 4km south of Shenfield) has also yielded material that may indicate rural occupation during the Roman period.

Overall archaeological potential: low, increasing to moderate at Shenfield.
A rural landscape and recent urbanisation (c AD 450 – present)

At the western end of the zone, the area that later became Harold Wood was largely a single land holding, the manor of Gobyons or Gubbins first documented in 1507. The manor house and home farm were on Gubbins Lane, just north of Harold Wood station. There was no associated village, 17th-century settlement being further south at Cockabourne Bridge, where the road from Ardleigh Green (see Zone B) crossed the river Ingrebourne. The Gubbins estate survived construction of the railway, but was broken up in the late 19th century and is now part of Harold Wood Hospital. However much of the area remained open farmland and modern Harold Wood is largely the result of the 1948 Abercrombie Report, which showed the need for extensive development to house London’s overflow population.

Brentwood was the most significant settlement in this zone and dates from the later 12th century, when William of Ockendon gave the Abbey of St Osyth his lands of Brentwood called Cocstede. The town began from a clearing in the Essex forest (the name means burnt wood) at a strategic junction on the crest of the ridge, where a road from the north intersected the London to Colchester highway. Following the murder of Archbishop Thomas a Becket and his canonisation in 1173, this route was increasingly used by pilgrims travelling from the midlands and East Anglia to his shrine at Canterbury, via the Thames ferry at Tilbury. The Abbey probably established the town to cater for this traffic, as reflected in Pilgrims Hatch, a village just to the north (hatch being a forest gate). Brentwood is first mentioned in 1176 and in 1184 the monks of St Osyth were allowed to enclose woodland. In 1221 they built a chapel dedicated to St Thomas a Becket (partially surviving as a Scheduled Monument, c 700m north of Brentwood station).

The growth of the wool trade and cloth industry in Essex also encouraged development of the town and in 1227 a grant was made to hold a market and two fairs. The medieval nucleus is on the High Street between Ingrave Road and Tower Hill. Some early buildings survive; the White Hart Inn on the High Street has timber-framed walls and tiled roofs, and probably dates from the second half of the 15th century. Some archaeological evidence for medieval Brentwood has been found in archaeological investigations at St Faith’s Hospital and 125–127 High Street. However the Crossrail route, including the station, lies outside this nucleus, to the south.

Brentwood remained predominantly a country market town until 1843, when the arrival of the Eastern Counties Railway lead to gradual expansion. During the Second World War Brentwood, like other towns in Essex, was a category ‘A’ nodal point, prepared for all-round defence by the Home Guard. Defences such as road blocks and mortar and machine gun emplacements were constructed, located to defend the main roads; for example a Pillbox Wireless Station on Doddinghurst Road. Wartime Shenfield also contained defences, forming an outpost of those in Brentwood. Little of this former military landscape survives, apart from a Spigot Mortar emplacement adjacent to Shenfield station, and a military building in Hutton.

To the east of Brentwood, Shenfield was a small medieval village around the 13th-century St Mary’s church and nearby manor house, Shenfield Hall. Both are located on Hall Lane to the north of the main Chelmsford and Colchester road, about 800m north-west of the railway station. The manor is first recorded as part of the estates of...
Humphrey de Bohun, Earl of Hereford and Essex, who died in 1298. In 1460 it was seized by Edward IV after the then owner (Humphrey Stafford, Duke of Buckingham) was killed fighting on the rebel side at the battle of Northampton, and this may correlate with 15th-century improvements to the church. There may have been some later migration towards the main road, to take advantage of passing coach traffic, as evidenced by the 17th-century Green Dragon Inn, at the junction with Hutton Road. However, the land south of the main road remained largely rural, even after the arrival of the railway. The suburban housing across this area, merging with the development of the Hutton Mount estate to the south, dates mainly from the late 19th and early 20th centuries.

**Overall archaeological potential: moderate.**

### 2.4.4 Selected research themes


- Investigation of the transition from Palaeolithic to Mesolithic. (7).
- The spatial and chronological relationship to Roman sites. (17).
- More research on the Roman road network is needed. (21).
- The creation of settlement diversity models and their testing. (25).
- Intensive study of settlement patterns through time. (29).
- Comparison of population structures within and between towns. (30).
3 Scheme Description

3.1 Overview of Crossrail Works in the North-East Route Section

Permanent Works
Crossrail services within the northeast route section will run on the existing electric suburban tracks of the GEML. Little new rail alignment will be created, although new track will be required to provide a freight loop between Goodmayes and Chadwell Heath in order to replace an existing loop at Manor Park, which will be removed. Also, the reconstruction of Shenfield station will be undertaken as well as new junction works at Ilford.

Crossrail will require new or extended platforms at several stations in order to accommodate its 200m long trains. At Romford and Ilford, new station buildings and other facilities will be provided as well.

Crossrail’s other major facility on this line is a new depot and stabling sidings to the west of Romford station and south of the GEML. This is linked to the eastbound and westbound Crossrail running lines by an dive-under (rail underpass) enabling Crossrail trains to access the depot without hindering services on the main lines. Stabling sidings will also be provided on re-modelled existing sites at Gidea Park and Shenfield. New sidings will be constructed at Aldersbrook (near Ilford) to facilitate fit-out of the Crossrail tunnels, and at Pitsea for disposal of excavated material.

3.1.1 Construction
Construction methods for the Western route section are described in further detail in Chapter 10 of the Environmental Statement, under each route window.

3.1.2 Design Options
Design options which have been considered, but not taken forward, are described in Chapter 10 of the Environmental Statement, under each route window.

3.2 The Route Windows
The scale of the works along the route varies. Relatively minor works, such as station platform extensions, will take place in some route windows with more substantial works, such as the development of Romford depot, taking place in others. The table below summarises the main works (excluding enabling works) that will take place in the northeast section. Those route windows containing the more substantial works are highlighted with shading.
The level of detail that is reported in subsequent sections for route windows NE1 to NE17 and R1 is commensurate with the extent of works that is proposed in each of these route windows.

**Main Elements of the Project in the North Eastern Route Section (route windows with major works are highlighted)**

<table>
<thead>
<tr>
<th>Route Window</th>
<th>Main Project Works</th>
<th>Local Authority</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NE1 Stratford Station</strong> (Biggers Road to Carnarvon Road)</td>
<td>• Platform alterations</td>
<td>LB Newham</td>
</tr>
<tr>
<td><strong>NE2 Forest Gate Station</strong> (Carnarvon Road to Balmoral Road)</td>
<td>• Platform extensions</td>
<td>LB Newham</td>
</tr>
<tr>
<td><strong>NE3 Manor Park Station</strong> (Balmoral Road to Gloucester Road)</td>
<td>• Platform extensions</td>
<td>LB Newham</td>
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<td></td>
<td>• Shortening of freight loop</td>
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<tr>
<td><strong>NE4 Ilford Station</strong> (Gloucester Road to Hainault Street)</td>
<td>• Extension of platforms and removal of the bay platform</td>
<td>LB Redbridge</td>
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<tr>
<td></td>
<td>• Construction of a new ticket hall</td>
<td></td>
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<tr>
<td></td>
<td>• New sidings for construction/fitout of the central area tunnels (Aldersbrook sidings)</td>
<td></td>
</tr>
<tr>
<td><strong>NE5 Seven Kings Station</strong> (Hainault Street to St Albans Road)</td>
<td>• Platform extensions</td>
<td>LB Redbridge</td>
</tr>
<tr>
<td><strong>NE6 Goodmayes Station</strong> (St Albans Road to Wadeville Avenue)</td>
<td>• Platform extensions</td>
<td>LB Redbridge</td>
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<tr>
<td></td>
<td>• Introduction of new freight loop (Chadwell Heath Loop)</td>
<td></td>
</tr>
<tr>
<td><strong>NE7 Chadwell Heath Station</strong> (Wadeville Avenue to Whalebone Lane South)</td>
<td>• Platform extensions</td>
<td>LB Redbridge</td>
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<tr>
<td></td>
<td>• Track works</td>
<td>LB Barking &amp; Dagenham</td>
</tr>
<tr>
<td></td>
<td>• Introduction of new freight loop (Chadwell Heath Loop)</td>
<td></td>
</tr>
<tr>
<td><strong>NE8 Romford Depot (west)</strong> (Whalebone Lane South to Sheringham Avenue)</td>
<td>• Romford Depot Underpass and associated track works</td>
<td>LB Barking &amp; Dagenham</td>
</tr>
<tr>
<td></td>
<td>• Widening of Jutsums Lane bridge</td>
<td>LB Havering</td>
</tr>
</tbody>
</table>
### Route Window NE9: Romford Station & Depot (east)

- **Main Project Works**
  - Extension of platforms
  - Reconstruction of the ticket hall and extension of the ticket hall
  - Construction of a new depot
  - New stabling sidings

- **Local Authority**
  - LB Havering

### Route Window NE10: Gidea Park Station

- **Main Project Works**
  - Platform extensions

- **Local Authority**
  - LB Havering

### Route Window NE11: Gidea Park Stabling Sidings

- **Main Project Works**
  - New stabling sidings

- **Local Authority**
  - LB Havering

### Route Window NE12: Harold Wood Station

- **Main Project Works**
  - Platform extensions

- **Local Authority**
  - LB Havering

### Route Window NE13: LB Havering / Brentwood DC Boundary

- **Main Project Works**
  - None

- **Local Authority**
  - LB Havering
  - Brentwood BC

### Route Window NE14: Brook Street

- **Main Project Works**
  - None

- **Local Authority**
  - Brentwood BC

### Route Window NE15: Brentwood Station

- **Main Project Works**
  - Platform extensions

- **Local Authority**
  - Brentwood BC

### Route Window NE16: Thrift Wood

- **Main Project Works**
  - None

- **Local Authority**
  - Brentwood BC

### Route Window NE17: Shenfield Station

- **Main Project Works**
  - New stabling sidings
  - A new platform face

- **Local Authority**
  - Brentwood BC

### Route Window R1: Pitsea

- **Main Project Works**
  - New rail sidings

- **Local Authority**
  - Basildon District Council

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### 3.3 Route Window NE1: Stratford Station

#### Overview of Route Window NE1

The main works in this route window, which is located in LB Newham, will involve ensuring that platform five is suitable for use by Crossrail trains. The works will involve the widening of platform five, which forms part of island platform three/four/five. Some refurbishment works in addition to the fitting of new platform furniture will also be undertaken on the platforms. Overall, the construction works will take approximately four months to complete.
The current platform four (used by the DLR services) will be filled in to provide more space on platform five, the westbound Crossrail platform. DLR is constructing a new platform arrangement for its services and has planning permission for these works (received September 2004). The new DLR platform arrangements will be in place by 2006.

The works at Stratford station will be carried out within the existing railway corridor at the eastern end of the station from sections of the existing platform three/four/five. In addition, there will be a site adjacent to the current station track that will be used for storage. Plant and materials for platform construction will be delivered by both rail and road transport. Excavated materials will be removed by road or rail.

The main construction plant to be used at the worksite will include cranes, excavators, piling rigs and mechanical breakers. Construction traffic will access the worksite via the station access point from Meridian Square, off Great Eastern Road (A11).

Generally, the worksite will be served by one lorry per day. Approximately four lorries in total per day will access the worksites during a three week peak construction period.

3.4 Route Window NE2: Forest Gate Station

Overview of Route Window NE2

The main works in this route window, which is located in LB Newham, comprise platform extensions. The GEML platforms (island platforms two and three and platform one) will be extended westwards by 19m to 205m to accommodate 10-car Crossrail trains.

Platform works will be carried out in conjunction with track realignments and signal work. Overall, the construction works will take approximately 10 months to complete.

Works will be carried out from within the existing fenced boundary of the railway and include a small area to the south of the station for storage. This worksite will be accessed from Earlham Grove. The works will be serviced by an additional site on former railway land at the eastern end of Manor Park station. A rail mounted crane will be used for lifting platform materials. All large items of plant will be delivered and removed by rail. Other materials will be delivered by lorries to a loading zone on Forest Lane. Excavated materials will be removed by road.

The main construction plant to be used at the worksite will include cranes, rail cranes, excavators, piling rigs and mechanical breakers.

Generally, the worksite will be served by one lorry per day. Approximately three lorries in total per day will access the worksites during a six week peak construction period.
3.5 Route Window NE3: Manor Park Station

Overview of Route Window NE3

The main works in this route window, which is located in LB Newham, comprise platform extensions. The GEML platforms (platforms one, two and three) will be extended westwards and eastwards by 22m to 205m to accommodate 10-car Crossrail trains. Platform one will be widened and the track that passes to the south of platform one (the ‘Up Independent Goods Loop’) will be removed from Forest Gate to east of Manor Park station. A replacement goods loop will be provided between Goodmayes and Chadwell Heath.

Platform works will be undertaken in conjunction with track realignments and signal works. The existing footbridge/walkway between platforms one and two/three will be modified with stairs to platform one. Subject to possession planning requirements and excluding final commissioning, the construction works will take approximately one year to complete.

Works at this site will be carried out from within the existing fenced boundary of the railway and will include a site at the eastern end of Manor Park station. The worksite will be accessible from Station Road. A section of Manor Park Road will be temporarily used to accommodate a mobile crane. Large items of plant and materials will be removed by rail, while others (including excavated materials) will be removed by road.

The main construction plant to be used at the worksite will include cranes, excavators and mechanical breakers.

Generally, the worksite will be served by one lorry per day. Approximately five lorries in total per day will access the worksites during a peak construction period of two and a half months.

3.6 Route Window NE4: Ilford Station

3.6.1 Overview of Route Window NE4

This route window lies in LB Newham and LB Redbridge. The works include the provision of a new station building accessible from Cranbrook Road, York Place and Ilford Hill, and temporary tunnel fit out sidings on derelict land at the Aldersbrook sidings site to the west of the North Circular Road. The works to Ilford station will be undertaken within a railway cutting.

3.6.2 The Permanent Works

The proposed station building will be located west of the existing building and will consist of a public concourse area in the existing station entrance to Cranbrook Road, a walkway along the north boundary extending over platform five, a main ticket hall and concourse area over the five tracks to access a new entrance from York Place, and the ramp area leading up from Ilford Hill. The staff accommodation and operations
room will be situated above the ticket hall. This will create an open station with multiple access points.

To accommodate longer Crossrail trains at Ilford station, platforms two, three and four will be extended westwards from 19m to 205m and platform four/five to 5m in width. The proposed extension of platform four/five and the increase in platform width to accommodate the stair/escalator will require the realignment of track five. This will result in the shift northwards of track five and the widening of platform five. The existing ticket hall will be demolished.

Crossrail will rebuild the disused Aldersbrook sidings to the west of Ilford station. These will be used during the construction phase as a tunnelling logistics site. The railway training school building will be demolished, a new road access will be provided. When rebuilt, the site will consist of six sidings, a widened embankment and a hard standing area.

3.7 Route Window NE5: Seven Kings Station

Overview of Route Window NE5

Within this route window, two GEML platforms (island platforms two, three and platform four) will be extended westwards by 18m to 205m to accommodate 10-car Crossrail trains. Platform works will be carried out in conjunction with track realignments, OHLE and signal works. Overall, the construction works will take approximately five months to complete.

The works at this station will be carried out from the existing fenced boundary of the railway on platforms four and two/three. The worksite will be located to the north west of the existing station within the grounds of Canon Palmer Catholic School. It will be accessible from Lombard Avenue, off Aldborough Road South. Large plant and materials for platform construction will be delivered and removed by rail. Other materials and excavated materials will be removed by road.

The main construction plant to be used at the worksite will include cranes, rail cranes, excavators, piling rigs and mechanical breakers.

Generally, the worksite will be served by one lorry per day. Approximately two lorries in total per day will access the worksites during a peak construction period that will last a month.

3.8 Route Window NE6: Goodmayes Station

Overview of Route Window NE6

The main works in this route window, which is located in LB Redbridge, comprise platform extensions at Goodmayes station and the construction of the Chadwell Heath freight loop.
The platform extensions comprise the eastward extension of two GEML platforms (platforms two, three and four) by 16m to 205m to accommodate 10-car Crossrail trains. The construction works at Goodmayes station will take approximately five months to complete. The construction of the Chadwell Heath freight loop will partially overlap these works and will occur over a four month period. The construction works for the loop spans both this route window and Route Window NE7.

Works at the Goodmayes station worksite will be carried out from within the existing fenced boundary of the railway on platforms four and two/three. The worksite servicing activities on the site will be located on redundant railway land to the northeast of the existing station next to platform one. Access to the site will occur from the High Road via existing service roads alongside Goodmayes Retail Park and the Superstore car park. Large items of plant and materials for the construction works will be delivered and removed by rail. Other materials, including excavated materials will be delivered by road.

The main construction plant to be used at the worksite will include cranes, excavators, piling rigs and mechanical breakers. Generally, the worksite will be served by one lorry per day. Approximately two lorries in total per day will access the worksites during a peak construction period of approximately a month.

The currently disused Goodmayes to Chadwell Heath freight loop will be reinstated to replace the goods loop at Manor Park. This work will include the removal of the existing redundant loop track. The trackbed will need to be lowered at the bridge at both Goodmayes and Chadwell Heath stations. Associated signalling works will take place, in addition to the installation of the crossover at the western end of the station. OHLE and signalling will then be installed. A new drainage system and a walkway will be installed adjacent to the tracks.

This track work will be carried out from within the existing fenced boundary of the railway to the south of the existing track. The main worksite will be located at the eastern end of the station with another to the south of the existing tracks at Goodmayes station. Access to the main worksite will be from Goodmayes Road via Kinfauns Road and Express Drive. Large items of plant and materials, including excavated materials for the works will be delivered and removed by road. Generally, the Express Drive southern worksite will be served by one lorry per day. One lorry per day will access the worksites during a two month peak construction period.

### 3.9 Route Window NE7: Chadwell Heath Station

#### Overview of Route Window NE7

This route window lies within LB Redbridge and LB Barking and Dagenham. The main works comprise platform extensions to Chadwell Heath station and the construction of the Chadwell Heath freight loop.

The GEML platforms two, three and four will be extended westwards by 16m to 205m to accommodate 10-car Crossrail trains. New platform furniture and lighting will be provided and minor station refurbishment works will be carried out.
Works at the station will be carried out from within the existing fenced boundary of the railway on platforms two/three and four. The worksite servicing activities on the site will be located within an existing car park off Valance Avenue. For the platform extension works, plant and materials will be brought from the Chadwell Heath freight loop worksite to the east of the station by rail. Access to the site will occur from Valance Avenue.

The currently disused single line to the south of the main lines will be reinstated to replace the goods loop at Manor Park. These works will include the removal of the existing redundant track. Once track beds are prepared and the new track is laid, OHLE and signalling will be installed. A new drainage system and a walkway will also be installed adjacent to the tracks.

The freight loop track work will be carried out from within the existing fenced boundary of the railway to the south of the existing track. The main worksite will be located at the eastern end of the station; a second will be located south of the existing tracks at Goodmayes station. Access to the main worksite will be from Valence Avenue. Large items of plant and materials, including excavated materials for the works will be delivered and removed by road.

The main construction plant to be used at the worksite will include cranes, rail cranes, excavators, piling rigs and mechanical breakers. Generally, the freight loop worksite will be served by one lorry per day. One lorry per day will access the worksite during an eight week peak construction period. The Chadwell Heath station worksite will be served by two lorries per day during the five week peak construction period and by one per day at other times.

3.10 Route Window NE8: Romford Depot (west)

3.10.1 Overview of Route Window NE8

The route alignment in this route window passes through LB Barking and Dagenham and LB Havering. The main works in this route window comprise the construction of a rail underpass in order to reduce conflicting movements between trains on the GEML and those moving to and from a new Romford depot. This will also require works to Jutsums Lane bridge.

3.10.2 The Permanent Works

Romford Depot Underpass

At the west end of the site and to the east of the bridge over Whalebone Lane South, a new junction, including the tracks on the northern side of the alignment currently used by Metro services, will be created. The alignment of the GEML will be extended to the north to accommodate two tracks that will be used to access the depot site from the west. The works, involving provision of a widened embankment and a new retaining wall from Whalebone Lane South to the Jutsums Lane bridge, will require acquisition of the southern edge of the West Ham United FC training ground and part
of Westland’s Playing Field. The two new tracks will continue to the eastern border of the West Ham United FC training ground where they will descend through a new rail underpass beneath the GEML before accessing the depot on the south side of the line.

**Jutsums Lane Bridge Works**

Having passed through the new underpass, the two tracks will climb a new ramp to cross an extended bridge over Jutsums Lane. A new retaining wall and embankment will be constructed on the southern boundary of this new alignment. A new departures and arrivals road will also be constructed between Jutsums Lane and a point immediately east of the underbridge to allow access between the depot and the fast lines.

### 3.11 Route Window NE9: Romford Station and Depot (East)

#### 3.11.1 Overview of Route Window NE9

The main works in this route window will consist of a new depot and stabling sidings located on the old goods yard site to the west of Romford station and on the south side of the GEML. In addition, the works will include a rebuild and extension to Romford station.

Romford station is located in LB Havering, to the west of South Street on the railway viaduct between Havanna Close and Atlanta Boulevard. South Street runs through the commercial and retail centre of Romford, connecting with the Romford ring road. The site of the depot and stabling sidings is surrounded primarily by industrial and commercial uses to the south, and by the GEML and residential neighbourhoods to the north, with Old Church Hospital immediately to the east of Nursery Walk.

#### 3.11.2 The Permanent Works

**Romford Depot (East)**

The new maintenance depot building will be constructed between Sandgate Close and Nursery Walk and to the north of the Gas Works site. It will consist of eight covered tracks in a building 260m in length, 68m wide and up to 12m high. The total floor space of the depot is 22,000m².

The depot will include car parking for 250 cars with the main car parking area (150 spaces) accessed off Nursery Walk and the secondary/over-flow parking area (100 spaces) accessed off Sandgate Close. Sandgate Close will also accommodate access to the depot for lorries and the relocated Mail Sorting Office access point.

To the northeast of the building on an area of land to the north of Old Church Hospital and bounded to the east by Waterloo Road, an additional 10 tracks will be constructed to stable trains. To accommodate the stabling sidings, the pedestrian underpass that carries Nursery Walk beneath the site will be extended.
No replacement site has yet been identified for Network Rail’s Overhead Line maintenance facility.

Romford Station

To accommodate longer Crossrail trains, platform five will be extended westwards by 18m to 205m, to accommodate an overall train length of 200m. The island platforms three/four will be extended by 21.5m. The existing ticket hall is too small to satisfy the requirements of a principal station. To achieve this, Crossrail propose to acquire and demolish the buildings on Nos. 110–116 South Street. A new ticket hall and associated staff accommodation will be developed on the site of 110–116 South Street as an extension to the original ticket hall.

3.12 Route Window NE10: Gidea Park Station

Overview of Route Window NE10

The main works in this route window, which is located in LB Havering, comprise platform extensions. The eastern end of two GEML island platforms (platform 3 and platform 4) will be extended eastwards by 22m to 205m to accommodate 10-car Crossrail trains. New platform furniture and lighting will be provided and minor station refurbishment works will be carried out. Construction at Gidea Park station will take place over approximately three months.

Works at this station will be carried out from within the existing fenced boundary of the railway on platforms three and four. It is proposed that the worksite will occupy the whole of the station car park. Access to the site for lorries will occur from the A118 Main Road via Balgores Lane and Crossways through the existing car park entrance. Large items of plant and materials will be brought to the site at Gidea Park station by rail. Other materials, including excavated materials will be delivered by road.

The main construction plant to be used at the worksite will include cranes, rail cranes, excavators, piling rigs and mechanical breakers.

Generally, the Gidea Park station worksite will be served by one lorry per day. Approximately two lorries in total per day will access the worksites during a peak construction period of about a month.

3.13 Route Window NE11: Gidea Park Stabling

3.13.1 Overview of Route Window NE11

The proposed Crossrail works at Gidea Park involve the extension of existing sidings and provision of new sidings in order to provide stabling for Crossrail trains. The Gidea Park stabling site is located in LB Havering, on the site of the existing sidings to the east of Upper Brentwood Road and some 150m to the east of Gidea Park station. An area of mature woodland exists to the north of the sidings.
The current stabling sidings are surrounded primarily with residential neighbourhoods to the north and south of the station, with light industrial units and warehousing to the south of the rail corridor. An established belt of vegetation separates housing areas to the north from the railway sidings. The Royal Liberty School is located on the northern side of Upper Brentwood Road. There are few shops in the locality, with no obvious town centre location. Light industrial, residential and commercial areas are located on the Southend Arterial Road located to the east of the stabling sidings.

3.13.2 The Permanent Works

Crossrail’s stabling sidings at Gidea Park will include the rebuilding of the existing sidings which lie in a shallow cutting to the east of Upper Brentwood Road. The existing sidings will be extended northwards with three new tracks provided. In total, seven sidings will be provided for Crossrail trains, each 240m in length. All works will be undertaken in existing railway land and a new retaining wall constructed on the northern boundary.

3.14 Route Window NE12: Harold Wood Station

Overview of Route Window NE12

The main works in this route window, which is located in LB Havering, comprise platform extensions. Two GEML platforms (platform three and platform four) will be extended eastwards by 38m to 205m to accommodate 10-car Crossrail trains. In addition, new platform furniture and lighting will be fitted and minor station refurbishment works will be carried out. The works will take approximately four months to complete.

Construction works will be carried out from within the existing fenced boundary of the railway on platforms two/three and four. The worksite servicing activities on the site will be located in part of the existing station car park to the north east of platform four. Access to the main station entrance and forecourt will occur from Gubbins Lane. Large items of plant and materials for construction will be delivered and removed by rail. Other materials, including excavated materials will be removed by road.

The main construction plant to be used at the worksite will include cranes, rail mounted cranes, excavators and mechanical breakers.

Generally, the worksite will be served by one lorry per day. Approximately three lorries in total per day will access the worksites during a peak construction period that will last for a month and a half.

3.15 Route Window NE13: LB Havering/Brentwood DC Boundary

No Crossrail works will take place in this route window. There will therefore be no impacts related to construction activity, nor any permanent impacts related to issues of landtake or physical change.
3.16 Route Window NE14: Brook Street

No Crossrail works will take place in this route window. There will therefore be no impacts related to construction activity, nor any permanent impacts related to issues of landtake or physical change.

3.17 Route Window NE15: Brentwood Station

Overview of Route Window NE15

The main works in this route window, which is located in Brentwood BC, comprise platform extensions. Two GEML platforms (platforms three and four) will be extended eastwards by 21m to 205m to accommodate 10-car Crossrail trains.

The platform works will comprise widening to the north side of platform four and of island platform two/three to accommodate 10-car Crossrail trains. In addition, new platform furniture and lighting will be fitted and minor station refurbishment works will be carried out. The works will take approximately four months to complete.

Construction works will be carried out from within the existing fenced boundary of the railway on platforms two/three and four. The worksite servicing activities on the site will be located in part of the existing station car park to the north east of platform four. Access to the site will be made via The Parade through the existing car park entrance. Materials for the platform construction works will be delivered and removed by rail. Other materials, including excavated materials will be removed by road.

The main construction plant to be used at the worksite will include cranes, excavators and mechanical breakers.

Generally, the worksite will be served by one lorry per day. Approximately two lorries in total per day will access the worksites during a peak construction period that will last a month.

3.18 Route Window NE16: Thrift Wood

No Crossrail works will take place in this route window. There will therefore be no impacts related to construction activity, nor any permanent impacts related to issues of landtake or physical change.

3.19 Route Window NE17: Shenfield Station

3.19.1 Overview of Route Window NE17

Works in this route window, which is located in Brentwood Borough Council (BC), include the provision of additional stabling, a new platform and alterations to the Southend and Colchester rail lines. Works will occur principally in railway land along an existing rail corridor.
3.19.2 The Permanent Works

Stabling Sidings
To accommodate the longer Crossrail trains, the two existing middle sidings at the east end of the station will be extended eastwards by 30m and increased in number from two to three. New retaining walls and earthworks will be constructed to accommodate the revised layout. The Southend loop (forms the connection between platform five on the electric lines and the Southend Victoria route) and Colchester loop (rejoins the GEML at the eastern end of the Shenfield station layout, immediately beyond the middle sidings) will be modified to accommodate the changes to the sidings.

Shenfield Station
A new track will be installed on the north side of platform five to accommodate terminating Crossrail trains. A new platform 210m long will be constructed on the north side of platform five. To improve operations, Crossrail will install a number of new crossovers at the west end of the station. The southern most section of the three stabling sidings will be amended to facilitate through running of trains.

3.20 Route Window R1: Pitsea

3.20.1 Overview of Route Window R1
The main works within this route window will involve the development of a rail siding for unloading excavated material from rail to road for final delivery to the landfill site at Pitsea. The permanent works will comprise the introduction of railway tracks, trains, lighting columns, unloading equipment, a new access road and a new building at the entrance to the site for use during the transfer of excavated material to the disposal site. On completion of their use for Crossrail, all temporary buildings, sidings and equipment will be removed.
4 Site assessments

4.1 Route Window NE1

4.1.1 Site 301 Stratford Station

<table>
<thead>
<tr>
<th>Site name</th>
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<th>Site no.</th>
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<tr>
<td>Route Section</td>
<td>Shenfield</td>
<td>Window</td>
<td>NE1</td>
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<td>Location</td>
<td>Stratford Station: Station Street/Angel Road, LB of Newham</td>
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<tr>
<td>NGR</td>
<td>538530 184420</td>
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**Proposed Works**

Removal of DLR facilities at embankment level at south-eastern end of station; infilling DLR track bay (platform 4) in order to create wider Crossrail platform; construction compound. *Associated works to relocate the DLR do not form part of the Crossrail EIA.*

**Geology and Topography**

Alluvium, within the Lea valley river system, over Lea river terrace gravels.

The Channelsea River flows beneath Stratford Station. It is an artificial channel, diverted in the 19th century for the Great Eastern Railway, and again during construction of the Jubilee Line Station in the 1990s. The original course probably ran from the existing section north-west of the station, beneath the Jubilee Line station, to connect up with the existing course again east of Jupp Road. The centre-line of this course is estimated to pass c 10m north-east of the DLR bay, but the width and course of the earlier channel is not precisely known. Excavations at the JLE station site in 1994 (HW-GY94) found that river silts continued up to at least 3.50m OD, and extended below 0.70m OD (*see Saxon resources, below*).

Recent work (the Lea Valley Mapping Project) has shown that the alluvium in the general area is relatively shallow, and lies over a low gravel terrace. It is thought that this represents part of the valley floor that was not reworked at the end of the last cold stage. There is evidence for it being cut by a Holocene palaeochannel close to the site, which may have had small areas of wetland associated with it. However, the majority of the site area may not have become wetland until the historic period.

Surrounding land levels vary considerably, due to railway and other construction. General ground level is c 4.5m OD and the elevated level of platforms to be modified is c 8.5m OD.

**Baseline resources**

- No Scheduled Ancient Monuments within 750m search radius.
- Within LB Newham *Archaeological Priority Area*
• **Stratford station** opened in 1839, as part of the Eastern Counties Railway, one of the earliest in the world and has been repeatedly expanded and altered since. The 19th-century nucleus was in the north-west part of the present station and original buildings survive between platforms 10a and 11, including the disused eastern subway (extending to east end of platform 3/5). There are also unlocated features, such as a workmen’s subway further east. Former station buildings serving the Victoria Park branch are shown on the 1894 Ordnance Survey on the southern side of the main embankment, beneath the modern ground level entrance and concourse. These original structures are not affected by the proposed Crossrail works.

• **High potential** for prehistoric wetland activity within the Lea valley alluvium, including associated geoarchaeological and palaeo-environmental data, allowing reconstruction of topographic change. There is also a moderate potential for ‘Arctic Beds’ or other Late Devensian (30,000 to 10,000 BP) organic deposits within or beneath the underlying gravel, providing information and dating about parts of the Devensian cold stage, as yet poorly understood (Lea Valley Mapping Project).

• **High potential** for prehistoric dry-land activity on a gravel terrace of the Lea floodplain, sealed by later alluvium. Bronze and Iron Age timbers have been found c 300m to the north-west (SBX00), including possible worked off-cuts. Palaeolithic, Neolithic and Bronze Age axes have also been found within the search area (closest 325m south-east: KDR00; GLSMR 060583, 061746, 060258, 061743, 061745, 062513).

• **High potential** for Saxon remains associated with river channels, including preserved organic materials. The adjacent Channelsea is thought to have been dug c 895 by Alfred the Great as part of fortifications against the Danes. A timber revetment found c 100m to the south-east, on the Jubilee Line station site, survived up to c 2.3m OD and consisted of substantial driven stakes with associated leather waste and late Saxon pottery (HW-GY94; GLSMR 062238; and 061645 outside the Route Window). Excavations c 300m to the north-west have revealed a timber and masonry bridge abutment or jetty dated to the 7th to 8th century (SBX00). Although boats of Iron Age, Saxon and later date have been found within the Lea valley alluvium, they were 2–9km north of the Crossrail site and this is only a low potential (GLSMR 060252, 060817, 060839, 061106, 080122, 080303, 080579, 080581/01, 081555, 082121).

• **High potential** for post-medieval land reclamation and for the extensive 19th-century railway infrastructure and industry. Maps of 1746, 1777 and 1799 suggest the area of Crossrail works was farmland on the western edge of Stratford until the railway was built in the late 1830s. By the time of the 1894 Ordnance Survey...
the surrounding area was heavily industrial. The proposed construction compound lies over the former Stratford Goods Yard, from 1863 the main depot and works of the Great Eastern Railway. Originally established by the Eastern Counties Railway, it included a Mechanics Institute (1851) (see Past Impacts, below). Post-medieval features associated with drainage and agriculture have been found in the search area, and a possible timber pile for a signal box at Gibbins Yard (HW-GY94, HWBS93; GLSMR 061773, 062028, 062240, 062244).

- **Moderate potential** for Roman and medieval activity associated with the London to Colchester road; including land reclamation, flood defences and agriculture on the edge of the river valley. The road itself probably entered the marshes of the Lea initially on a causeway, from the higher ground to the east. Although it has not so far been located, the projected line passes c. 75m south of the Crossrail site. Roman artefacts and building features have been found within the search area (HW-GY94, NMS01; GLSMR 062237, 061633, 061635, 062379, 062384, 062688). Features from medieval agriculture and land management occur c. 100m east of the Crossrail site (HW-BS93; GLSMR 062028).

### Current status of land

| Track/platforms elevated on a retained embankment, which incorporates Channelsea River culvert, North London Line under-bridge and Central Line tunnels at lower level. The proposed Crossrail construction compound (worksite) is at present in use as a site compound for the Channel Tunnel Rail Link. |

### Past impacts

- Although railway construction is itself an archaeological resource, it has substantially reconfigured the original topography of the site, eg for the main line embankment and its retaining walls. In the area of the construction compound, the 1894 Ordnance Survey shows the sidings and buildings of Stratford Goods Yard, part of which had already replaced the earlier Mechanics Institute (shown on the 1882 Survey).

### Importance of the baseline resources

- **Pre-19th-century resources within the study area are unlikely to be affected by the Crossrail scheme:**

  - **High importance: high potential** for artificial Late Saxon Channelsea river and associated timber and possibly masonry structures, such as revetments, jetties or bridges. **Reasons:** considerable rarity of the Alfredian defensive system associated with re-occupation and re-fortification of London (*Lundenburh*); **historical association** with prominent figures and events; **survival quality** within alluvium, in particular the preservation of organic materials.
• **Moderate importance: high potential** for prehistoric activity and supporting geoarchaeological and palaeo-environmental data. *Reasons:* good survival quality, including potential sealed land surfaces; deposit type likely to preserve evidence of past river regime, environment and land use and hence potential to contribute to published priorities (e.g., Museum of London 2002: 79, 82).

• **Moderate importance: moderate potential** for Roman and medieval activity associated with the London to Colchester road. *Reasons:* potential to contribute to published priorities (e.g., Museum of London 2002, 82).

• **Moderate importance: high potential** for post-medieval industry and railway infrastructure. *Reasons:* formal designation within an Archaeological Priority Zone, historical and archaeological supporting data, potential to contribute to published priorities (e.g., Museum of London 2002, 69, 74).

**Impact**

<table>
<thead>
<tr>
<th>Works</th>
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<tbody>
<tr>
<td>Works entail filling-in the DLR bay (platform 4), widening of platform 5, plus the construction of small structures such as kiosks, and refurbishment of the Eastern Tunnel. These works will have no impact because the footings will be within the existing embankment fill above original ground level. The ground level construction compound, however, has potential for an impact upon 19th-century railway remains.</td>
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<tr>
<td>Filling-in of the DLR bay. It is currently assumed that this would be founded on two mass concrete strip foundations which require approximately 1m of excavation (ES Scheme Description Rev 1.8). These works will have no impact because the footings will be within the existing embankment fill, which has been heavily disturbed in the 20th century.</td>
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<tr>
<td>Relocation of waiting rooms, kiosks, etc to the filled-in bay. These works will have no impact because the footings will be within the existing embankment fill.</td>
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<tr>
<td>Possible refurbishment of the Eastern Tunnel will have no impact because the refurbishment affects above ground structures only.</td>
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<tr>
<td>Construction compound: Stratford Station Worksite on the southern side of Angel Lane and western side of the Great Eastern Road. Although details are not currently available, footings for accommodation (c. 0.4 to 0.8m deep) and preparatory ground reduction (c. 0.5m deep) might expose or partially remove 19th-century archaeological remains (principally railway infrastructure, including the Mechanics Institute). Such depths of excavation would not affect Saxon remains if they were present at similar levels to those seen at Gibbins Yard, c. 2.3m OD, and remains associated with the river channel are less likely to extend to this location than the Crossrail station site to the south-west.</td>
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</table>
### Magnitude of impact before mitigation

Low, with potential for a **Non-Significant impact**

### Additional information required?

Consideration of the detailed engineering design and of survey and geotechnical data, in order to refine the mitigation strategy.

### Incorporated mitigation

Further assessment would be required, as above, probably followed by an archaeological watching brief, because of the low impact of the proposed works.

### Residual impact after incorporated mitigation

None

The incorporated mitigation measures would constitute *preservation by record*.

### Site specific mitigation

None required

### Residual impact after site specific mitigation

Non-significant

### Engineering sources

<table>
<thead>
<tr>
<th>Sources</th>
<th>Engineering Information provided by Crossrail</th>
</tr>
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<tbody>
<tr>
<td>Historical / Archaeological</td>
<td>A 750m-radius search of GLSMR and LAARC.</td>
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<tr>
<td>sources</td>
<td>Greater London Industrial Archaeology Society (GLIAS) database v.2.65</td>
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<td></td>
<td>Lawrence, D., 1995, <em>The Archaeological Investigations at HWGY94, Gibbins Yard, Gibbins Road</em></td>
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<tr>
<td></td>
<td>John Rocque 1746 Map of London and the surrounding area</td>
</tr>
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<td></td>
<td>John Chapman and Peter André 1777 Map of the County of Essex</td>
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<tr>
<td></td>
<td>Anon 1799 Stratford le Bow, 3 inches to the mile</td>
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<tr>
<td></td>
<td>Ordnance Survey 1st edition 25” map, 1869</td>
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<tr>
<td></td>
<td>Ordnance Survey 1st edition 6”map, 1882</td>
</tr>
</tbody>
</table>

### Researcher

| KT, JD-M JC, RC, AF, | Date | 12/12/04 |
4.2 Route Window NE2

4.2.1 Site 303 Forest Gate Station

<table>
<thead>
<tr>
<th>Site name</th>
<th>Forest Gate Station</th>
<th>Site no.</th>
<th>303</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route Section</td>
<td>Shenfield</td>
<td>Window</td>
<td>NE2</td>
</tr>
<tr>
<td>Location</td>
<td>Forest Lane, Forest Gate, LB Newham</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGR</td>
<td>540240 185275</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposed Works</td>
<td>Platform extensions; revised track and signalling layout; construction compounds.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geology and Topography</td>
<td>Taplow gravel, over Lambeth Group sandstone and mudstone and London Clay. Flat land for surrounding street pattern.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Baseline resources

- No Scheduled Ancient Monuments or archaeological fieldwork sites within search area.
- The Crossrail works fall within an Archaeological Priority Area.
- Forest Gate station is a locally listed building.
- Low potential for redeposited and reworked Palaeolithic artefacts within the Taplow gravels.
- Low potential for activity associated with the Roman road running c.260m to the south of the Crossrail site. No such features have been found to date in the search area, suggesting that any remains that were present could be confined to agriculture or other low intensity activities.
- Low potential for features associated with a medieval/post-medieval manor house, known from 1189, located south-east of the Crossrail site (GLSMR 061798). The extent of the manorial estate is unclear and much of it would have been open, agricultural land.
- Low potential for railway infrastructure, in particular below-ground remains of an 1870s station building (possible waiting room?) and footbridge located in the eastern half of platforms 2/3.

Current status of land

| Visited ? | Yes |

Past impacts

The railway cutting will have removed any in situ archaeological deposits (with the possible exception of railway features or reworked Palaeolithic remains in the Taplow gravels).

Importance of the baseline resources

- Moderate importance: low potential: for activity associated with the Roman road. Reasons: formal designation within an Archaeological Priority Area; local rarity of data from the area.
- **Moderate importance: low potential** for medieval and later manor house and estate. *Reasons:* historical supporting data; diversity of multi-phase resources, but the house is some distance from the Crossrail site and hence there is a low probability of surviving remains.

- **Moderate importance: low potential** for 19th-century railway infrastructure. *Reasons:* group value and historical documentation/association with the GER (formerly Eastern Counties Railway), which, with other early railways, is a *key feature* in the economic and social development of London.

- **Low importance: low potential** for reworked or redeposited Palaeolithic artefacts. *Reasons:* limited potential to contribute to published priorities.

<table>
<thead>
<tr>
<th>Impact</th>
<th>The proposed platform extensions, track works and construction compound would have <strong>no or minimal archaeological impact:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Platform extensions</strong> of 19m at the western end and associated <strong>track realignment</strong>. The foundations to the platform extensions would consist of concrete beams supported on <em>c</em> 10m deep piles. As the platforms are in a cutting there would be <strong>no or minimal impact</strong>, confined to a low potential for railway features or redeposited Palaeolithic artefacts.</td>
</tr>
<tr>
<td></td>
<td><strong>Two construction compounds:</strong> Forest Gate Station Worksite West and Forest Gate Station Worksite East would both be located outside the cutting where there could be better archaeological survival. Worksite West would be accessed from Forest Lane and Worksite East from an access road leading from Earlham Grove. Although details are not yet available, the compounds would be used primarily for storage of plant and materials, not necessitating significant ground works and so there would be <strong>minimal impact.</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Magnitude of impact before mitigation</th>
<th>Low, with potential for a Non-significant impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional information required?</td>
<td>Consideration of the detailed engineering design and of survey and geotechnical data, in order to refine the mitigation strategy.</td>
</tr>
<tr>
<td>Incorporated mitigation</td>
<td>Further assessment, as above, probably followed by an archaeological watching brief only, because of the low magnitude of impact of the proposed works.</td>
</tr>
</tbody>
</table>
| Residual impact after incorporated mitigation | **None**  
The incorporated mitigation measures would constitute *preservation by record.* |
### Site specific mitigation
None required

### Residual impact after site specific mitigation
None

### Significance of Residual Impact
Non-significant

<table>
<thead>
<tr>
<th>Sources</th>
<th>Engineering Information provided by Crossrail ES Scheme Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Historical / Archaeological sources</td>
<td>A 500m radius search of GLSMR and LAARC Greater London Industrial Archaeology Society (GLIAS) database v.2.65 Ordnance Survey 1st edition 25” map, 1869</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Researcher</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>KT, PM, RC, JC, HK, AF</td>
<td>21/12/04</td>
</tr>
</tbody>
</table>
4.3 Route Window NE3

4.3.1 Site 304 Manor Park Station

<table>
<thead>
<tr>
<th>Site name</th>
<th>Manor Park Station</th>
<th>Site no.</th>
<th>304</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route Section</td>
<td>Shenfield</td>
<td>Window</td>
<td>NE3</td>
</tr>
<tr>
<td>Location</td>
<td>Station Road, Manor Park, LB Newham</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGR</td>
<td>541895 185690</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposed Works</td>
<td>Platform extensions; revised track and signalling layout; construction compound</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geology and Topography</td>
<td>Interface of Taplow and Hackney gravels, over interface of Lambeth Group sandstone and mudstone and London Clay. Possibility for Ilford Sand and Silts at the interface of the gravels. Away from station, the area is relatively flat with an imperceptible slope down to the south.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Baseline resources

- No Scheduled Ancient Monuments within the search area.
- Temporary landtake east of Station Road (but not the construction works) falls within an **Archaeological Priority Area**.
- **Burial Grounds**: the western end of the Crossrail site is adjacent to Manor Park Cemetery (on the north side of the railway). *The cemetery is outside the Crossrail works.*
- **High Potential** for garden design features associated with the 1799 mansion from which Manor Park derives its name (Site code HE-WH95; GLSMR 061782, 062142, 062143). Nineteenth century maps, including the 1882 Ordnance Survey, show the railway bisecting the gardens, although the house itself was some distance away, to the north.
- **Moderate potential** for *in situ* Palaeolithic faunal remains, and a low potential for artefacts, from the Ilford Sands and Silts, if present on the site (GLSMR 060231; 061616). Also a low potential for *in situ* Palaeolithic remains from the Hackney Gravels.
- **Low potential** for features associated with the Roman London to Colchester road, aligned along Romford Road 240m south of Crossrail site (GLSMR 062598, note SMR location in accompanying figures is only accurate to 1km).
- **Low potential** for Saxon/medieval manor (site of the original house unknown). The Crossrail site is within the estate, known from 1066, when Alestan held 8 hides of arable land and 60 acres of meadow stretching from the Thames westwards to the Lea, and eastwards to (modern) East Ham High St. The estate was donated by 1135 to Stratford Langthorne Abbey, reverted to the crown at the Dissolution in 1538 and was leased out variously until 1805.
• **Low potential** for historic railway infrastructure. Manor Park Station was a later (1870s) addition to the 1839 Eastern Counties Railway (from 1862 the Great Eastern Railway). The present Edwardian station is located on the Station Road overbridge. The original station was at cutting level to the west and comprised three small buildings at the eastern ends of platforms 1 and 2, *outside the footprint of the proposed works* (1881 Ordnance Survey).

<table>
<thead>
<tr>
<th>Current status of land</th>
<th>Tracks/platforms set in cutting c 2 to 3m below surrounding street level. Station is on the overbridge that spans the cutting.</th>
<th>Visited ?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Past impacts</td>
<td>The railway cutting would be too deep for archaeological strata or features to survive, with the exception of potential Palaeolithic remains within the Ilford Sand and Silts at the interface of the two gravel terraces.</td>
<td></td>
</tr>
</tbody>
</table>
| Importance of the baseline resources | • **High importance:** *moderate potential* for *in situ* Palaeolithic faunal remains, and a *low potential* for artefacts. *Reasons:* national *rarity*. Reworked or redeposited remains would be of *low importance*.  
  • **Moderate importance:** *low potential* for Roman roadside activity (the road itself lies outside the Crossrail site). *Reasons:* *formal designation* within an Archaeological Priority Zone; potential to contribute to *published priorities* (eg Museum of London 2002, 82). Any significant remains would have local *rarity*.  
  • **Moderate importance:** *low potential* for Saxon/medieval manor (house documented but not located). *Reasons:* *formal designation* within an Archaeological Priority Zone; local *rarity*; historical *supporting data*, but low probability of features being present.  
  • **Moderate importance:** *high potential* for garden design features from post-medieval mansion. *Reasons:* historical *supporting data*.  
  • **Moderate importance:** *low potential* for 19th-century railway infrastructure. *Reasons:* as per Site 303, above. |
| Impact                         | Platform extensions, track works and a construction compound. The works are all within the railway cutting, and would have **no or minimal archaeological impact:**  
  • **Platform extensions** at the western end of the main line platforms (platforms 1 and 2/3) by 22m. Platform 1 will also be widened. The foundations would consist of concrete beams supported on c 10m deep piles. Associated **track works** include removal of an existing freight line on the south side of the GEML (from Station Road, west towards Forest Gate Junction) to allow for revised layout, signalling and services. **Minimal impact**, confined to the possibility of removing Palaeolithic remains, in the already truncated terrace gravels.  
  • **New footbridges** The existing footbridge would be demolished and replaced with first a temporary and then a permanent footbridge, |
the foundations of which fall within the existing platforms (c 0.5m and c 1.0 deep respectively). **No or minimal impact**, confined to the possibility of removing Palaeolithic remains in the already truncated terrace gravels.

- **Construction compound:** Manor Park Station Worksite on disused land within the cutting, south of the railway, to the east of the Station Road overbridge, but with an access route linking it to the works on the west side. The limited ground works for the access route, hard standing and footings for accommodation etc would have **no or minimal impact**, confined to the possibility of removing Palaeolithic remains, in the already truncated terrace gravels.

There would be **no impact** on Manor Park Cemetery

<table>
<thead>
<tr>
<th>Magnitude of impact before mitigation</th>
<th>Low with potential for a <strong>Non-significant impact</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional information required?</td>
<td>Consideration of the detailed engineering design and of survey and geotechnical data (particularly for possible Ilford Sands and Silts) in order to refine the mitigation strategy.</td>
</tr>
<tr>
<td>Incorporated mitigation</td>
<td>Further assessment would be required, as above, probably followed by an archaeological watching brief only, because of the low magnitude of impact of the proposed works.</td>
</tr>
<tr>
<td>Residual impact after incorporated mitigation</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>The incorporated mitigation measures would constitute <em>preservation by record.</em></td>
</tr>
<tr>
<td>Site specific mitigation</td>
<td>None required</td>
</tr>
<tr>
<td>Residual impact after site specific mitigation</td>
<td>None</td>
</tr>
<tr>
<td>Significance of Residual Impact</td>
<td><strong>Non-Significant</strong></td>
</tr>
</tbody>
</table>

**Sources**

<table>
<thead>
<tr>
<th>Engineering sources</th>
<th>Engineering Information provided by Crossrail ES Scheme Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Historical / Archaeological sources</td>
<td>A 500m radius search of GLSMR and LAARC. Greater London Industrial Archaeology Society (GLIAS) database v.2.65 Ordnance Survey 1st edition 25” map 25” map, 1869 Ordnance Survey 6” map, 1882</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Researcher</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>KT, PM, RC, JC, HK, AF</td>
<td>21/12/04</td>
</tr>
</tbody>
</table>
4.4 Route Window NE4

4.4.1 Site 318 Aldersbrook Sidings

<table>
<thead>
<tr>
<th>Site name</th>
<th>Aldersbrook Sidings</th>
<th>Site no.</th>
<th>318</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route Section</td>
<td>Shenfield</td>
<td>Window</td>
<td>NE4</td>
</tr>
<tr>
<td>Location</td>
<td>Aldersbrook House, Ilford: LB Newham; LB Redbridge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGR</td>
<td>543087 186217</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposed Works</td>
<td>Tunnelling fit-out site for the Crossrail project including new sidings, widened embankment, new bridge, widening existing subway and culvert, construction compound.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geology &amp; Topography</td>
<td>Part of the Crossrail site consists of a narrow linear strip of land on Taplow terrace gravels, west of the Roding valley. The main part of the Crossrail site is an artificially raised platform within the river valley, beneath which is alluvium associated with channels of the Roding and Alders Brook, which border the site to the east and west respectively. These deposits lie at c 3m OD, with modern ground level some 2–3m above this. As mapped by the BGS, the boundary between the valley alluvium and terrace gravels falls within the Crossrail site, west of the Alders Brook (see under prehistoric potential, below).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Baseline resources | • There are no Scheduled Ancient Monuments within the search area.  
• The site lies within an **Archaeological Priority Zone**.  
• **Burial Grounds**: The City of London Cemetery, GLSMR 221563, is located c 100m to the west of the Crossrail site, on the opposite (western) side of the Alders Brook but is not affected by the Crossrail works.  
• **Moderate potential** for features associated with the Roman London to Colchester road, thought to have run along the Romford Road c 60–70m to the south of the Crossrail site, although there is as yet no supporting archaeological evidence from the vicinity. The road would have crossed the Roding and Alders Brook by fords or possibly bridges, probably located outside the Crossrail site.  
• **Moderate potential** for Mesolithic and later prehistoric occupation and land use. This may occur both sealed by or within the river alluvium and on the nearby Taplow gravels, in particular in areas close to the wetland/dry land interface (which falls within the Crossrail site). Although no such finds have been made in the search area, the deposit types indicate a good background potential. This is strengthened by the likely association of geo-archaeological and palaeo-environmental evidence within the alluvium, allowing reconstruction of past landscapes and environment. Further afield, Iron Age occupation is known from the higher ground of the gravel terraces to either side of the Roding valley, notably the extensive... |
Uphall Camp (Site codes HOW60/61, ILF-UC83/4/7), c. 1.2km south of the Crossrail site. A ring ditch c. 1km to the north suggests possible Bronze Age monuments (GLSMR 061111). It is possible that remains could include timber structures, such as the trackways found closer to the mouth of the Roding, at London Road, Barking (site code BA-TS93) and Barking Tesco, c. 2.3km and 2.8km to the south of the Crossrail site, respectively.

- **Low potential** for medieval and later agriculture and industry associated with settlements in the general area. The main historic nucleus of the market town of Ilford (Hyle ford) lay to the east, on the opposite side of the Roding. Settlement is documented from Domesday and centred along High Road (Site code ILF59; GLSMR 061228, 061244, 061245, 061102, 061395, 061713). The ford was replaced by a bridge, documented from the 14th century, and probably near the existing bridge c. 125m to the south-east of the Crossrail site (GLSMR 060263). Aldersbrook (GLSMR 061642), a post-medieval property with medieval origins shown on the Rocque and the Chapman maps (1746 and 1777), lay c. 500m to the north-west, its grounds extending towards the site by the 18th century. Industry utilised the water power of the Alders Brook and Roding. The suggested site of an 11th-century mill (GLSMR 062686) is located c. 750m to the north-west and to the east a further mill was associated with the medieval leper hospital at Ilford (GLSMR 060913). A paper mill is shown directly east of the site on the east bank of the River Roding on the 1894 Ordnance Survey map, when the area of land raising was partially occupied by railway sidings, but no other structures.

| Current status of land | The majority of the Crossrail site is raised above the surrounding Roding valley, presumably to cope with flooding. BGS mapping shows the raised area as made ground, implying substantial alteration to ground level. On the south side of the Great Eastern Main Line, the late 19th-century Aldersbrook sidings are at a comparable railway embankment level. To the south of the sidings, the adjoining disused College of Railway Technology (also part of the Crossrail site) is at a lower intermediate level, but still artificially raised above ground level, as represented by Romford Road. The raised part of the Crossrail site is bordered to the east by the main river channel (the Roding) and to the south and west by the subsidiary Alders Brook. The North Circular (A406) passes over the Crossrail site and GEML on an elevated road deck supported on concrete piers. | Visited ? | Yes |
| Past impacts | Construction of the railway, including bridges, drainage and culverts associated with the surrounding waterways. However, over most of the Crossrail site the artificial land raising will have sealed and protected archaeological deposits. |
### Importance of the baseline resources

- **Moderate importance: moderate potential** for prehistoric remains and for associated palaeo-environmental sequences. *Reasons: formal designation* within an Archaeological Priority Zone, local *rarity*, and potential to contribute to *published priorities* (eg Museum of London 2002, 80). If timber structures such as trackways were present, these would be of **high importance**.

- **Moderate importance: moderate potential** for the Roman road and activity associated with it. *Reasons: formal designation* within an Archaeological Priority Zone at crossing of the River Roding; group value and potential to contribute to *published priorities* (eg Museum of London 2002, 82). Any significant remains would have local *rarity*.

- **Moderate importance: low potential** for medieval and later agriculture and industry *Reasons: historical supporting data; contribution to published priorities* (eg Museum of London 2002, 80, 82, 83).

### Impact

Tunnelling fit-out site for the Crossrail project including new sidings, new bridges, and a construction compound. However, most of the Crossrail site is artificially raised and here only deep foundations (such as piling) would affect potential archaeological remains. Generally, there is **no or minimal archaeological impact, with the exception of works on the periphery**, where land is at ground level (notably the bridge works).

- **New sidings.** The existing tracks are to be removed and the embankment extended by infilling on the south side to create an area of new, wider sidings. The extended embankment takes in an additional strip of land for new tracks entering the sidings from the west. This runs for c 375 m along the south side of the GEML, to the rear of properties along Colchester Avenue and Daines Close, and is presently at ground level. The face of the new embankment will require localised retention, probably using sheet piling. Overhead line equipment, signalling and track drainage would be relocated in order to accommodate the new track layout. There would also be diesel refuelling plant, requiring a localised foundation slab 1–2m deep. With the possible exception of the sheet piling (depending on depth) there is **no impact** from these works as the majority of the Crossrail site is (or will become) artificially raised ground.
• **Bridge and culvert works:** to accommodate the widened tracks entering the sidings from the west, there is an option for two new bridges, one over the pedestrian access route from Aldersbrook Lane into the City of London Cemetery (including extension of the existing subway) and the second across the Alders Brook (including extension of the existing stream culvert). A major water main and sewer also pass beneath the railway at this point (within the subway and Alders Brook, respectively) and protective measures will be required (details not yet available). The impact would be to partially or completely remove potential archaeological remains where the associated foundation works extend below ground level.

• **Construction compound:** Aldersbrook Sidings Worksite. The entire area of the existing sidings and former training school, plus the additional strip of land south of the GEML, would be required during construction. The compound would be located on the training school area. Temporary works include land clearance and demolition of existing structures; new hard standing and slab for accommodation and plant; an access road on the west side (from Romford Road) and security fencing. **No or minimal impact:** the majority of these works occur at a raised level, on modern infill. Only the access road and any other works at ground level have potential to partially remove any surviving archaeological remains.

<table>
<thead>
<tr>
<th>Magnitude of impact before mitigation</th>
<th>Low with potential for a <strong>Significant impact</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional information required ?</td>
<td>Consideration of the detailed engineering design and of survey and geotechnical data (eg for the depths of land raising and alluvium) in order to refine the mitigation strategy.</td>
</tr>
<tr>
<td>Incorporated mitigation</td>
<td>The generic data gathering and mitigation measures, as described in the incorporated mitigation, would be applied to this Crossrail site. Initially, DDBA and/or field evaluation, would be required to establish levels of survival.</td>
</tr>
<tr>
<td>Residual impact after incorporated mitigation</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>The incorporated mitigation measures would constitute <em>preservation by record</em></td>
</tr>
<tr>
<td>Site specific mitigation</td>
<td>None required</td>
</tr>
<tr>
<td>Residual impact after site specific mitigation</td>
<td>None</td>
</tr>
<tr>
<td>Significance of Residual Impact</td>
<td>Non-Significant</td>
</tr>
<tr>
<td>Sources</td>
<td>Engineering sources</td>
</tr>
<tr>
<td>---------</td>
<td>---------------------</td>
</tr>
<tr>
<td></td>
<td>Historical / Archaeological sources</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Researcher</th>
<th>Date</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PM, HK, AF, JC</td>
<td>21/12/04</td>
<td></td>
</tr>
</tbody>
</table>
### 4.4.2 Site 305 Ilford Station

<table>
<thead>
<tr>
<th>Site name</th>
<th>Ilford Station</th>
<th>Site no.</th>
<th>305</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route Section</td>
<td>Shenfield</td>
<td>Window</td>
<td>NE4</td>
</tr>
<tr>
<td>Location</td>
<td>Cranbrook Road, Ilford, LB Redbridge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGR</td>
<td>543460 186465</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposed Works</td>
<td>New station, including platform extensions and construction compounds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geology and Topography</td>
<td>Hackney Thames terrace sands and gravels, to the east of the valley of the river Roding.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Baseline resources**

- The Crossrail site lies c 35m north of a LB Redbridge Archaeological Priority Zone, corresponding to the line of a Roman Road (see below).

- No Scheduled Ancient Monuments within search radius.

- **Burial Grounds**: Approximately 125m to the south of Crossrail site is the medieval and post-medieval chapel of the hospital of the Virgin Mary (GLSMR 060913) the associated leper hospital and a burial ground, where 22 leper burials were excavated (ILF59). These resources are outside the Crossrail site and not affected by the proposed works.

- **Moderate potential** for features associated with the Roman London to Colchester road, aligned along Ilford High Road, 90m south of Crossrail site. However, no such activity is known from the vicinity of the Crossrail site.

- **Moderate potential** for the medieval and later settlement of Hyle ford (Ilford) documented from Domesday and centred along High Road (Site code ILF59; GLSMR 060913, 061228, 061244, 061245, 061102, 061395 061713). Also for the estate associated with the leper hospital (see burial grounds, above). A tile kiln (documented 1613) was found c 180m east of Crossrail site (GLSMR 061643).

- **Low potential** for Palaeolithic remains. Important in situ finds have been made in the general area (see Route Overview) from the interface of the Hackney and Taplow terraces (capped locally by brickearth). Although that boundary crosses the railway twice between Ilford and Seven Kings, no Crossrail works are proposed there. The Ilford station site itself is located on the main Hackney sands and gravels, where there is a background potential for in situ remains, eg finds c 9km to the west, in Stoke Newington.

- **Low potential** for prehistoric agriculture and settlement from the Neolithic to Iron Age periods. Although relatively little is known, there should be a good background potential on the gravel terrace east of the Roding valley. The lack of present evidence may simply
reflect an absence of modern archaeological fieldwork, in areas of existing (largely suburban) development.

- **Low potential** for historic infrastructure from the Eastern Counties Railway (from 1862 the Great Eastern Railway). Ilford was one of the original 1839 ECR stations, but these buildings are no longer extant as the site has been progressively redeveloped, expanding from the original two tracks to five. Demolitions for the Crossrail proposals would principally affect elements of 1890s iron and brick platform structures and staircases. However, there is a possibility of truncated below-ground remains. The 1882 Ordnance Survey shows the nucleus of the original station at cutting level on the south side, with a ticket hall, locomotive shed and possible workshop or offices, in an area currently occupied by platform 1 and a strip to the south of it. The main entrance to the Victorian station was from Ilford Hill to the south, and this route would be re-opened as part of the Crossrail proposals. A disused station building also survives on the north side of the line, providing a secondary entrance from York Mews. This is probably a late 19th/early 20th-century addition, and is not shown on the 1882 Ordnance Survey map, when land north of the station was still largely open and undeveloped.

| Current status of land | Eastwards from the edge of the Roding valley, the land rises, from c 11.50m to 14.50m OD, whereas almost all the Crossrail site is at railway level (c 9.50m OD) within a cutting which reaches a maximum depth of 5m at the east end of the station. Here the present ticket hall is at overbridge level above the tracks, fronting Cranbrook Road. |
| Past impacts | The cutting will have removed virtually all archaeological remains, (see Impact, below). |
| Importance of the baseline resources | **High importance: low potential** for in situ Palaeolithic remains, *Reasons: national rarity.* Reworked or redeposited remains would be of low importance.  

- **Moderate importance: moderate potential** for features associated with Roman and later London to Colchester road. *Reasons: as per Site 304, above.*  

- **Moderate importance: moderate potential** for settlement, agriculture and industry associated with the medieval and later market town of Ilford, including the estate belonging to the leper hospital. *Reasons: historical supporting data; diversity of multi-phase resources; group value with other small towns in the wider area; contribution to published priorities* (eg Museum of London 2002, 80, 83).  

- **Moderate importance: low potential** for prehistoric agriculture and settlement. *Reasons: rarity of evidence indicates the potential for any in situ remains to contribute significantly to understanding of these periods locally.*
<table>
<thead>
<tr>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Moderate importance:</strong> <em>low potential</em> for 19th-century railway infrastructure. <em>Reasons:</em> as per Site 303, above.</td>
</tr>
</tbody>
</table>

The scheme includes a new relocated station, platform extensions, optional access road and temporary construction compounds. The majority of these works occur within the existing cutting, where there is unlikely to be archaeological survival (with the possible exception of truncated railway features, or Palaeolithic material within the terrace gravel). However, some works do occur at ground level, beyond the cutting, where there is better archaeological potential. *There is thus only a low potential for an archaeological impact, with the exception of limited works outside the cutting, which would partially or completely remove any surviving remains.*

- **New station buildings.** The present ticket hall would be demolished and the bridge-level deck supporting it extended westwards, to create a significantly larger upper area over the cutting. Upon this, a new station building, retail units and open space would be created. The deck superstructure would be supported on a grid of columns founded on concrete bases or piles at platform level below. There would also be localised foundations at railway level for new staircases, escalators and lifts linking the platforms to the upper concourse and a possible retaining wall to the north, where the deck adjoins existing properties on York Place. The majority of the works are within the existing cutting and so there would be only a low potential for an archaeological impact, as above. However, the street-level deck also extends beyond the railway to the south, creating a ramp for the new station entrance from Ilford Hill. Here, as the deck approaches ground level, the columns are replaced by concrete beams supported on mini-piling. To the extent that these localised ground works extend beyond the cutting, they may partially or completely remove any surviving archaeological features, close to the historic nucleus of medieval and later Ilford.

- **Platform extensions.** Island platforms 2/3 and 4/5 would be extended westwards by 19m and platform 5 also widened by 1.8m over its 170m length. Foundations would be pre-cast beams supported on mass concrete strip foundations or mini-piling. Associated works include track realignment, OHLE and new signalling. An existing 20th-century concrete deck and steel beam footbridge at the west end of the platforms would also be removed. These works are within the existing cutting and so there would be only a *low potential for an archaeological impact,* as above.
• **Roadway.** There is a possible new service road and emergency route at cutting level, north of platform 5. It would be accessed from York Mews and necessitate demolition of the secondary station building there. Although part of the historic fabric of the station, this structure is of late 19th/early 20th-century date. A ramp would also be required from cutting to street level. To the extent that it may extend outside the edge of the existing cutting, the ramp would partially or completely remove any surviving archaeological remains, including the former station building.

• **Two construction compounds.**
  - Ilford Worksite North would be located to the north of the railway. The east part of the worksite would be at cutting level, in the former siding north of platform 5. Here impact would be largely confined to three vehicle access ramps that would be required up to street level at Cranford Road, York Place and York Mews. These would partially or completely remove any surviving archaeological remains where they extend beyond the edge of the cutting. The remainder of this worksite would lie outside the cutting, west of the present secondary station entrance in York Mews. Although details are not yet available, the temporary ground works here are likely to be relatively minor, resulting in minimal impact, although any archaeological remains presently surviving at shallow depths may be affected.
  - Ilford Worksite South would be located to the south of the railway in the open car parking area that would become the main station entrance off Ilford Hill. Although details are not yet available, the temporary ground works here are likely to be relatively minor, resulting in minimal impact although any archaeological remains presently surviving at shallow depths may be affected.

There would be no impact on the burial ground of the medieval leper hospital.

<table>
<thead>
<tr>
<th>Magnitude of impact before mitigation</th>
<th>Low with potential for a Significant impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional information required ?</td>
<td>Consideration of the detailed engineering design and survey and geotechnical data, in order to refine the mitigation strategy.</td>
</tr>
</tbody>
</table>
The generic data gathering and mitigation measures, as described in the incorporated mitigation, would be applied to this Crossrail site. Initially, DDBA and/or field evaluation would be required to establish levels of survival (including railway history appraisal).

<table>
<thead>
<tr>
<th>Incorporated mitigation</th>
<th>The incorporated mitigation measures would constitute <em>preservation by record</em></th>
</tr>
</thead>
</table>

| Residual impact after incorporated mitigation | None |

| Site specific mitigation | None required |

| Residual impact after site specific mitigation | None |

| Significance of Residual Impact | Non-Significant |

<table>
<thead>
<tr>
<th>Sources</th>
<th>Engineering Information provided by Crossrail ES Scheme Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A 500m radius search of GLSMR and LAARC</td>
</tr>
<tr>
<td></td>
<td>Greater London Industrial Archaeology Society (GLIAS) database v.2.65</td>
</tr>
<tr>
<td></td>
<td>Ordnance Survey 1st edition 25” map, 1862–4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Researcher</th>
<th>KT, PM, RC, JC, HK, AF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>21/12/04</td>
</tr>
</tbody>
</table>
### 4.5 Route Window NE5

#### 4.5.1 Site 306 Seven Kings Station

<table>
<thead>
<tr>
<th>Site name</th>
<th>Seven Kings Station</th>
<th>Site no.</th>
<th>306</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route Section</td>
<td>Shenfield</td>
<td>Window</td>
<td>NE5</td>
</tr>
<tr>
<td>Location</td>
<td>High Road, Seven Kings, LB Redbridge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGR</td>
<td>545330 187075</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposed Works</td>
<td>Platform extensions and construction compounds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geology and Topography</td>
<td>Hackney sands and gravels, to the west of the former course of the Loxford stream. There is a possibility for Ilford Sand and Silts, at the interface of the Hackney and Taplow gravels, mapped c 90m west of the Crossrail works by the BGS. However, this interface is beneath brickearth, shown as present at the western end of the Crossrail site. Away from station, uneven levels on land for surrounding street pattern.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Baseline resources

- No Scheduled Ancient Monuments within search area
- Parts of the search area fall within an **Archaeological Priority Zone**, and the Crossrail works are immediately adjacent to, but *outside*, it.
- Seven Kings station is a **locally listed** building.
- **High potential** for features associated with the Roman London to Colchester road, the conjectured route of the road crosses the station within c 10m of the Crossrail works. These may include the road itself, roadside ditches, field systems, and settlement evidence.
- **High potential** for the medieval village of Seven Kings, recorded from 1285. The Crossrail site lies within this settlement (GLSMR 060982).
- **Low potential** for Palaeolithic remains in the Hackney sands and gravels and possibly (at the western end of the site) beneath the brickearth, in the Ilford Sands and Silts.
- **Low potential** for prehistoric agriculture and settlement from the Neolithic to Iron Age periods. Although relatively little is known there should be a good background potential on the brickearth and terrace gravel, near the Loxford stream. The lack of present evidence may simply reflect an absence of modern archaeological fieldwork, in areas of existing (largely suburban) development.
Current status of land

Tracks/platforms are in a cutting c 2m below surrounding street level. Seven Kings was a late addition to the GER, as suburban development did not begin here until the late 19th century. The Edwardian station building is at bridge level, over the tracks. From the south, the High Road rises to overbridge level, probably on an artificial embankment.

Past impacts

The railway cutting will have removed virtually all archaeological remains (see Impact, below).

Importance of the baseline resources

- **High importance**: low potential for in situ Palaeolithic remains. Reasons: national rarity. Reworked or redeposited remains would be of low importance.
- **Moderate importance**: high potential for roadside activity along Roman and later London to Colchester road. Reasons: as per Site 304, above.
- **Moderate importance**: high potential for medieval settlement of Seven Kings. Reasons: as per Site 305, above.
- **Moderate importance**: low potential for prehistoric occupation and land use. Reasons: rarity of evidence indicates the potential for any in situ remains to contribute significantly to understanding of these periods locally.

Impact

Platform extensions, including associated track works and an extension to the railway cutting retaining wall; temporary construction compounds. The majority of these works occur within the existing cutting, where potential archaeological survival is confined to the possibility of Palaeolithic remains within the terrace gravels or Ilford Sands and Silts. However, there would be limited works at ground level, outside the cutting, where there is a better archaeological potential. There is thus only a low potential for an archaeological impact with the exception of works outside the cutting.

- **Platform extensions**: platforms 2/3, and 4 would be extended by 18m, at the western end. The foundations to the platform extensions would consist of concrete beams supported on c 10m deep piles. Associated works include track realignment, signalling and OHLE. These works are within the existing cutting and so there would be only a low potential for an archaeological impact, as above.
- The platform extensions will require cutting back the northern face of the railway cutting adjacent and extending the existing retaining wall by 15m. This would completely remove any surviving archaeological remains, but only within a localised area.
- **Construction compound**: Seven Kings Worksite would be located outside the cutting, north of the railway at the western end, and would be used for storage and accommodation. Although details are not yet available, the temporary ground works are likely to be relatively superficial, not necessitating significant ground works, and so there would be minimal impact.
<table>
<thead>
<tr>
<th>Magnitude of impact before mitigation</th>
<th>Low, with potential for a <strong>Significant impact</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional information required ?</td>
<td>Consideration of the detailed engineering design and of survey and geotechnical data (e.g. gravels interface and possible presence of Ilford Sands and Silts) in order to refine the mitigation strategy.</td>
</tr>
<tr>
<td>Incorporated mitigation</td>
<td>Further assessment would be required, as above, probably followed by an archaeological watching brief, because of the low magnitude of impact of the proposed works.</td>
</tr>
<tr>
<td>Residual impact after incorporated mitigation</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>The incorporated mitigation measures would constitute <em>preservation by record</em></td>
</tr>
<tr>
<td>Site specific mitigation</td>
<td>None required</td>
</tr>
<tr>
<td>Residual impact after site specific mitigation</td>
<td>None</td>
</tr>
<tr>
<td>Significance of Residual Impact</td>
<td><strong>Non-Significant</strong></td>
</tr>
<tr>
<td>Sources</td>
<td>Engineering Information provided by Crossrail ES Scheme Description</td>
</tr>
<tr>
<td>Engineering sources</td>
<td>A 500m radius search of GLSMR, and LAARC Greater London Industrial Archaeology Society (GLIAS) database v.2.65 Ordnance Survey 1st edition 6”map, 1875</td>
</tr>
<tr>
<td>Historical / Archaeological sources</td>
<td>KT, PM, RC, HK, AF, JC</td>
</tr>
<tr>
<td>Date</td>
<td>21/12/04</td>
</tr>
</tbody>
</table>
4.6 Route Window NE6

4.6.1 Site 307 Goodmayes Station and Freight Line

<table>
<thead>
<tr>
<th>Site name</th>
<th>Goodmayes Station and Freight Line</th>
<th>Site no.</th>
<th>307</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route Section</td>
<td>Shenfield</td>
<td>Window</td>
<td>NE6</td>
</tr>
<tr>
<td>Location</td>
<td>Goodmayes Road, Goodmayes, extending eastwards to Chadwell Heath, LB Redbridge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGR</td>
<td>546500 187330 to 547500 187600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposed Works</td>
<td>Platform extensions, two construction compounds, and re-opening of a disused freight line, east towards Chadwell Heath</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geology and Topography</td>
<td>Hackney sands and gravels. The eastern freight loop and construction compound overlie Head deposits within a palaeo-channel associated with the valley of the Mayes Brook. Away from station, flat land in the surrounding street pattern</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Baseline resources               | • No Scheduled Ancient Monuments within search area.  
  • Parts of the search area fall within an Archaeological Priority Zone, which lies c 25m to the north of Crossrail site.  
  • Moderate potential for later prehistoric activity. Residual or unstratified flintwork and Late Iron Age and Late Bronze Age pottery was found c 200m east of Crossrail site, and may indicate a prehistoric settlement in the area (Site code IG-KR91; GLSMR 060733).  
  • Moderate potential for features associated with main Roman London to Colchester road (the High Road), c 120m north of Crossrail site.  
  • Moderate potential for medieval and later settlement and associated land use. Goodmayes was located around the junction of Goodmayes Lane and Green Lane c 200m south of the station as represented by farm/settlement documented from 1319; and a documented building (Green Lailford house) 330m to the south. The village of Chadwell Street, documented from 1456, was located on the western stream of the Mayes Brook, where it crosses the main highway (High Road) c 500m east of the station. (Site code IG-KR91; GLSMR 060153, 060686, 061950, 061951, 061224). These settlements are shown on the 1882 Ordnance Survey, within what was still an almost entirely rural landscape. |
• **Low potential**: for historic railway infrastructure. There were railway yards to the south and east of Goodmayes station, between the GEML and Kinfauns Road (Site code IG-KR91; GLSMR 061949). The station and these adjacent sidings are not original railway features and neither is shown on the 1882 Ordnance Survey. The yard site has been redeveloped and only the disused freight loop survives, along the south side of the main line (see Impact, below).

• **Low potential** for Palaeolithic remains (in the Hackney terrace gravels or beneath Head deposits in the Mayes Brook palaeo-channel) and for associated palaeo-environmental data.

<table>
<thead>
<tr>
<th>Current status of land</th>
<th>Visited ?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approaching the Crossrail site from the west, the railway is in a cutting c 3m deep. The present (Edwardian) station building is at bridge level on the east side of Goodmayes Road, over the tracks. Here the railway itself is broadly at grade on the south side but terraced in slightly on the north, to a maximum depth of c 1m. Moving east along the Crossrail site, ground levels increase outside the railway on both sides, but there is also a corresponding rise in the railway trackbed level (by about 1.50m west to east). The combined effect is that the railway is approaching grade on both sides of the line at the eastern end of the Crossrail site, towards Chadwell Heath.</td>
<td>Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Past impacts</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The current status of the land <em>(above)</em> may not reflect its original configuration. The 1882 Ordnance Survey (prior to construction of the station and the addition of two further tracks) shows the railway cutting continuing east of the overbridge; with the surrounding land open, including an extensive sunken area with ponds (possibly a former quarry) on the north side. It is therefore likely that the area of the Crossrail site has been reconfigured by excavation (eg quarrying to the north and an extension of the cutting on the south side, to create the later sidings). This factor may have reduced archaeological survival generally.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Importance of the baseline resources</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High importance</strong>: low potential for <em>in situ</em> Palaeolithic remains and associated palaeo-environmental data. <strong>Reasons</strong>: national rarity and potential for <em>supporting data</em> on ancient environments. Redeposited remains would be of low importance.</td>
<td></td>
</tr>
<tr>
<td><strong>Moderate importance</strong>: moderate potential for features associated with Roman London to Colchester road. <strong>Reasons</strong>: as per Site 304, above.</td>
<td></td>
</tr>
<tr>
<td><strong>Moderate importance</strong>: moderate potential for medieval and later settlement and land use relating to Goodmayes (western part of Crossrail site) and Chadwell Street (eastern part). <strong>Reasons</strong>: as per Site 305, above.</td>
<td></td>
</tr>
</tbody>
</table>
- **Moderate importance:** *moderate potential* for prehistoric activity (Late Bronze Age – Late Iron Age). *Reasons:* local rarity of *in situ* prehistoric remains; contribution to *published priorities*, e.g. Museum of London 2002, 25. Redeposited artefacts would be of *low importance*.

- **Low importance:** *low potential* for 19th-century railway features. *Reasons:* not considered of sufficient significance to contribute to published priorities.

### Impact

Platform extensions, two construction compounds and re-opening a disused freight line, generally with **only a low potential for an archaeological impact**.

- **Extension of platforms** 2/3 and 4 by 16m at the eastern end. The foundations to the platform extensions would consist of concrete beams supported on c 10m deep piles. Given that the railway may originally have been in a cutting at this point, there is likely to be *only a low potential for an archaeological impact*, confined to any Palaeolithic remains in the already-truncated terrace gravels.

- **Construction compound:** Goodmayes Station Works site would be located c 350m east of the station, on railway land north of the main line, behind superstores on Roman Road. It would be used for storage and accommodation. Although details are not yet available, the ground works are likely to be relatively superficial, with a *minimal impact*, although because this site is at ground level the works may truncate any archaeological remains surviving at shallow depths.

- **Freight line.** There is a redundant freight loop extending from the south side of Goodmayes station, east towards Chadwell Heath. This would be re-opened including the relaying of track and the restoration of signalling and OHLE gantries and drainage, also a new drainage system and walkway would be installed. Ground works are within the railway corridor and restricted to site clearance and a 200mm ballast depth. No or minimal archaeological impact is predicted, confined to a low potential for late 19th-century railway infrastructure. *See Site 308, below, for the construction compounds associated with these works.*

<table>
<thead>
<tr>
<th>Magnitude of impact before mitigation</th>
<th>Low, with potential for a <strong>Significant impact</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional information required?</td>
<td>Consideration of the detailed engineering design and of survey and geotechnical data (e.g. extent of modern land reconfiguration) in order to refine the mitigation strategy.</td>
</tr>
<tr>
<td>Incorporated mitigation</td>
<td>Further assessment would be required, as above, probably followed by an archaeological watching brief, because of the low magnitude of impact of the proposed works.</td>
</tr>
<tr>
<td><strong>Residual impact after incorporated mitigation</strong></td>
<td>None</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>The incorporated mitigation measures would constitute preservation by record</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Site specific mitigation</strong></th>
<th>None required</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Residual impact after site specific mitigation</strong></th>
<th>None</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Significance of Residual Impact</strong></th>
<th>Non-Significant</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Sources</strong></th>
<th><strong>Engineering Information provided by Crossrail ES Scheme Description</strong></th>
</tr>
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<tbody>
<tr>
<td><strong>Engineering sources</strong></td>
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<tr>
<td><strong>Historical / Archaeological sources</strong></td>
<td>Greater London Industrial Archaeology Society (GLIAS) database v.2.65</td>
</tr>
<tr>
<td></td>
<td>Ordnance Survey 1st edition 6” map, 1875</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Researcher</strong></th>
<th><strong>KT, PM, RC, HK, AF, JC</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Date</strong></td>
<td><strong>21/12/04</strong></td>
</tr>
</tbody>
</table>
4.7 Route Window NE7

4.7.1 Site 308 Chadwell Heath Station

<table>
<thead>
<tr>
<th>Site name</th>
<th>Chadwell Heath Station</th>
<th>Site no.</th>
<th>308</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Route Section</strong></td>
<td>Shenfield</td>
<td>Window</td>
<td>NE7</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td>Station Road, Chadwell Heath, LB Redbridge/ LB Barking and Dagenham</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>NGR</strong></td>
<td>547500 187580</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Proposed Works</strong></td>
<td>Platform lengthening and construction compounds</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Geology and Topography</strong></td>
<td>Predominantly Hackney terrace gravel, although the Crossrail site contains two geological boundaries. At the western end is the interface between the gravel and an area of overlying brickearth (Ilford Silts) whilst the eastern part of the site occupies an eroded outcrop of the underlying London Clay. The 1882 Ordnance Survey also shows the eastern stream course of the Mayes Brook passing through the station site. Land in the general area rises from c 17m OD to the south-west, to 19m OD north-east of the station.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Baseline resources**

- Parts of the search area, but *not* the Crossrail site, fall within an [Archaeological Priority Zone](#).
- No Scheduled Ancient Monuments within search area.
- **Burial Grounds**: Plymouth Brethren chapel and burial ground in use c 1844–1928. (GLSMR 060671). *This resource lies beyond the Crossrail site, c 200m to the north-east.*
- **Moderate potential** for a medieval and later manor including associated farms, gardens and estate, which was bisected by the railway and therefore falls within the Crossrail site. The manor house (Wangey House) was adjacent to the railway on the south side and was partly demolished to allow the original station to be built (Site code DA-WH88; GLSMR 061213, 061725, 061726).
- **Moderate potential** for features associated with medieval and later hamlet of Chadwell, centred 260m north of Crossrail site along the London to Colchester road and first referred to in 1254 (GLSMR 061305). It was adjacent to and associated with Wangey manor. Settlement extended south along the Mayes Brook from the main nucleus into the immediate vicinity of the Crossrail site. This includes Wangeyhall Farm, Chadwell Farm and Wangey House itself, as shown on the 1882 Ordnance Survey, within what was still a largely unaltered rural landscape until the late 19th century. To the north of the main road was the marshy ground of Blackheath Common (GLSMR 061294), later known as Chadwell Heath, which provided the source of the two branches of the Mayes Brook.
draining southwards (Chadwell is thought to derive from St Chad’s well).

- **Low potential** for Palaeolithic remains in the Hackney sands and gravels, or the overlying brickearth.

- **Low potential** for prehistoric occupation and land use from the Neolithic to Iron Age periods. Although relatively little is known, there should be a good background potential on the terrace gravel and brickearth in the vicinity of the Mayes Brook (the potential may decrease eastwards onto the London Clay). The lack of evidence may simply reflect an absence of modern archaeological fieldwork, in an area of largely suburban development.

- **Low potential** for features associated with Roman London to Colchester road, 260m north of Crossrail site.

- **Low potential** for historic railway infrastructure. Chadwell Heath was not an original stop on the 1839 Eastern Counties Railway. The first station dates from c. 1864 and is shown on the 1882 Ordnance Survey. It was a small building on the south side of platform 1, outside the footprint of the proposed works and is no longer extant. The present (Edwardian) ticket hall is at bridge level, over the tracks on the west side of Station Road.

### Current status of land

| Land levels outside the railway exhibit some variation west to east, being fairly level on the south side at c. 16m OD as far as the overbridge and then increasing to c. 18m OD beyond it. On the north side, over the same distance, levels decrease from c. 18m to 16m OD (opposite the present platforms) before increasing to c. 19m OD east of the overbridge. The railway trackbed itself is also rising, by c. 1.5m west to east. The combined effect is that approaching the station from the west, the railway is terraced into land on the north side, but is at ground level on the south side. It reaches grade relative to land on both sides from the west end of the present platforms through the station, before entering a cutting east of the overbridge (shallow to the south and c. 1.50m deep on the north side). Station Road rises on an artificial embankment to overbridge level. |
| Visited ? | Yes |

### Past impacts

Railway tracks, platforms and buildings may have caused some truncation of potential archaeological deposits, especially within the cutting, although the latter is **outside the area of the majority of the Crossrail works**.

### Importance of the baseline resources

- **High importance: low potential** for *in situ* Palaeolithic remains
  
  **Reasons:** national rarity. Redeposited remains would be of *low importance*. 
• **Moderate importance: low potential** for prehistoric occupation and land use. *Reasons*: rarity of evidence indicates the potential for any *in situ* remains to contribute significantly to understanding of these periods locally.

• **Moderate importance: low potential** for activity associated with the Roman and later road. *Reasons*: as per Site 304, above. *The route lies well outside the Crossrail works.*

• **Moderate importance: moderate potential** for medieval and later manorial estate, including Wangey House and the associated farms and settlement of Chadwell Heath to the north. *Reasons*: *diversity* and *complexity* of a multi-phase settlement, containing the economic and social nucleus of a manorial estate. *However*, excavations have so far failed to find the manor house.*

• **Low importance: low potential** for historic railway infrastructure. *Reasons*: unlikely to be of sufficient significance to contribute to published priorities.

### Impact

- **Platform extensions and construction compounds.**

- **Extension of platforms** 2/3 and 4 by 16m at the western end, plus associated track re-alignment and drainage pipe buried 1.0–1.5m below rail level. The foundations to the platform extensions would consist of concrete beams supported on c 10m deep piles. Because the railway is broadly at grade, the *impact* of these localised ground works would be to partially or completely remove potential archaeological remains within their footprints.

- **Three construction compounds:**
  - Chadwell Heath Loop Worksite West would be located 700m west of the station on railway land south of the main line, adjacent to the Mayfield School playing fields.
  - Chadwell Heath Station Worksite would be located immediately south of the station, and used for storage.
  - Chadwell Heath Loop Worksite East, a large site for accommodation, parking and storage, would be located 300m east of the station.

  General ground reduction of *c* 0.5m and footings for the accommodation (*c* 0.4 to 0.8m deep) at these worksites would be relatively superficial, not necessitating significant ground works, and so there would be *minimal* impact. *However,* because these sites are at ground level the works may truncate any archaeological remains presently surviving at shallow depths.

<table>
<thead>
<tr>
<th>Magnitude of impact before mitigation</th>
<th>Low with potential for a <em><a href="#">Significant impact</a></em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional information required ?</td>
<td>Consideration of the detailed engineering design and of survey and geotechnical data, in order to refine the mitigation strategy.</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Incorporated mitigation</td>
<td>Further assessment would be required, as above, probably followed by an archaeological watching brief, because of the low magnitude of impact of the proposed works.</td>
</tr>
</tbody>
</table>
| Residual impact after incorporated mitigation | None  
The incorporated mitigation measures would constitute *preservation by record* |
| Site specific mitigation         | None required                                                                                                   |
| Residual impact after site specific mitigation | None                                                                                                             |
| Significance of Residual Impact  | Non-significant                                                                                                 |

<table>
<thead>
<tr>
<th>Sources</th>
<th>Engineering Information provided by Crossrail ES Scheme Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Historical / Archaeological sources</td>
<td>A 500m radius search of GLSMR and LAARC Greater London Industrial Archaeology Society (GLIAS) database v.2.65 Ordnance Survey 1st edition 25” map, 1862-4 Ordnance Survey 1st edition 6”map, 1875</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Researcher</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>KT, PM, RC, JC, HK, AF</td>
<td>21/12/04</td>
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</tbody>
</table>
4.8 Route Window NE8

4.8.1 Site 316 Romford Depot

(*NB this site extends into RW NE9*)

<table>
<thead>
<tr>
<th>Site name</th>
<th>Romford Depot</th>
<th>Site no.</th>
<th>316</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route Section</td>
<td>Shenfield</td>
<td>Windows</td>
<td>NE8 &amp; NE9</td>
</tr>
<tr>
<td>Location</td>
<td>From Whalebone Lane South, eastwards to Waterloo Road, Romford, LB Havering</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGR</td>
<td>5458520/187750 (SW) to 551090/188300 (NE)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposed Works</td>
<td>New maintenance facilities, including: dive-under (underpass), depot building, embankment widening, track, stabling sidings, retaining walls, diversion of services, noise barriers, bridges and temporary construction compounds.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geology and Topography</td>
<td>The western end of the site lies on the interface of the Boyne Hill and Hackney gravel terraces. Between c 100m west of the A112 (Whalebone Lane) and c 270m to its east, the London Clay is exposed. East of this exposure, the remaining 80% of the site lies on the Hackney Gravels. Alluvium from the River Rom is mapped by the BGS c 60m to the east of the Crossrail site, and the River itself a further 100m to the east. BGS boreholes located on the Romford Gasworks site recorded up to 0.6m of made ground over a maximum of 0.9m of alluvium, which is in turn sealing 3.9m of sand/gravel and sand. A watercourse, described as a drain on modern Ordnance Survey maps, crosses the site c 700m east of Whalebone Lane, in the location of the proposed dive-under, possibly leading southwards into a shallow dry valley marked by Head deposits. This has probably been diverted from a natural watercourse shown on the 1890 Ordnance Survey map. Away from the site to the north and south the ground is relatively flat.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Baseline resources | • No Scheduled Ancient Monuments within the search area.  
• Approximately 90% of the Crossrail site is within an Area of Archaeological Priority, only the western c 400m of the works lying outside it.  
• Burial Grounds: Romford Cemetery lies c 200m south of, and outside the Crossrail site.  
• Existing historic railway infrastructure.  
  ○ Foundations for the unfinished Crowlands station survive in the northern face of the embankment, to the west of Jutsum’s Lane (RW NE8). Brick arched foundations for a future station were constructed in 1900 when the railway was widened from 2 to 4 tracks. The proposed platforms were to have been 642 feet |
(c 205m) long, and therefore the foundations probably occur within a similar distance to the west of Jutsums Lane. There is a possibility that comparable remains are present on the southern side, including a former signal box (Connor 2001).

○ A photograph in the HBDR (Fig 6.22, p 64) suggests that an underbridge from the original two track 19th-century railway may survive within the core of the subway at Nursery Walk (RW NE9), but the redundant overbridge to the south of the subway (HBDR Fig 6.23, p 65) is of later 19th or probably 20th-century date. Otherwise, there is a general low potential for historic railway infrastructure: the sidings at the east end of the site appear to be a relatively late addition, not on the 1881 Ordnance Survey and probably developed initially to supply coal to Romford Gas Works (first shown on the 1897 Survey, see below).

○ Coal Duties boundary marker. A Grade II listed stone obelisk dated to c 1861 is located on the railway embankment, within the proposed Romford Dive-under Worksite North (this potential impact is covered in the Heritage and Townscape technical report).

• High potential for below ground remains of late 19th-century gasworks (NE9: Romford Depot Worksite). Romford’s second gasworks were established in 1892 at Crow Lane/Nursery Walk, having been relocated from South Street, just north of the station (see Site 309). Only four gasholders remain above ground. The works had a rail link of which only a steel girder bridge over Nursery Walk survives. Nos. 3 and 4 Nursery Walk may be associated workers’ housing (GLIAS database). To the east of the gasworks, immediately south of the Crossrail site is Oldchurch Hospital. This former workhouse was built in 1838 by Francis Edwards. Parts of original workhouse buildings survive near the gas works but lie outside the Crossrail site (GLIAS database).

• Moderate potential for Bronze and Iron Age agricultural, settlement, and ritual remains: excavation on the terrace gravels on the western side of the valley of the Rom has produced evidence for prehistoric settlement and activity across a variety of periods. Flint artefacts have been recorded in the search area, and a Bronze Age palstave c 300m to the south-west. Eight ring ditches have been identified from aerial photographs in the area, one (GLSMR 061263) lies adjacent to the site, another lies c 400m to the south near Crow Lane (GLSMR 061131), and others to the north and south. An enclosure (GLSMR 060976) lies c 475m to the north and pits (GLSMR 062020) in the gasworks c 100m to the south. Ditches (Sitecode RO-SS89 and GLSMR 061705) are located c 325m south-east of Crossrail site.

Further afield, excavations at Warren Farm (Sitecode RO-WF88), c 1.3 km to the north of the Crossrail site, revealed evidence of settlement and agricultural activity including Mesolithic flintwork,
an early Iron Age fortified settlement c 100m in diameter, and Late Iron Age field systems.

- **Moderate potential** for medieval and post-medieval activity, principally farmsteads and agriculture, in a largely rural area on the periphery of known settlements. The Crossrail site was outside the market town of Romford until the later post-medieval period, the historic centre lying c 350m east (*Site 309, below*). There was probably a separate early medieval settlement in the Oldchurch area *but again this does not extend to the Crossrail site, c 350–400m to the north.*

At Site LRA98, 200m to the north of the Crossrail site, drainage ditches, post-holes and pits of medieval and post-medieval date were recorded. A number of medieval and post-medieval agricultural properties are located within the search area including Butlers Farm (GLSMR 061090), c 175m south of works and Lowlands Farm (GLSMR 060334) c 400m to the north. Crowlands house (GLSMR 061018), a property of medieval origin is also located c 175m south of the site and map evidence suggests a small rural settlement here, at the junction of Jutsums Lane and Crow Lane. To the west, map evidence also suggests that Crow Lane originally crossed the route of the later railway, near its junction with Whalebone Lane, but was diverted along the south side of the line when the railway was built.

There was a cavalry barracks north of the Crossrail site during the Napoleonic Wars, at the eastern end, and various inns (GLSMR 060408 and 060352). Romford Union Workhouse (GLSMR 060307) was built c 150m south of the Crossrail site in 1839. *Again though these resources do not extend to the Crossrail site.*

- **Low to moderate potential** for Roman remains. Low potential in the western area (RW NE8) increasing to moderate potential in the eastern c 600m to c 800m of the Crossrail site (RW NE9), which lies near a concentration of Roman material on the outskirts of Romford. The Roman road lies c 300 to 400m to the north of the Crossrail site (GLSMR 061129), and a cremation group (GLSMR 062491) and a possible Roman subsoil also recorded c 300m north of the Crossrail site (Site code SGF03). A Roman coin was recorded c 175m to the east of the works (GLSMR 060035).

- **Low potential** for Palaeolithic remains in the Hackney sands and gravels, as demonstrated by finds west of the search area in Stoke Newington, and from the Boyne Hill gravels, such as a Palaeolithic axe (GLSMR 061900) 450m to the north, and further afield flint assemblages from Chadwell Heath.

- **Low potential** for Saxon landscape features such as ditches (Site code: RO-SS89, 310m south of Crossrail site).
### Current status of land

Railway sidings and mainline track on a broad embankment about 3 or 4m high, flanked to the north by mainly residential properties and playing fields and to the south by a mixture of residential properties, light industrial areas, a sorting office, a hospital, and gas works. The Crossrail works extend along a c 2.8km stretch of the embankment. Areas of land take may include part of Westlands Playing Field on the north side of the line and (on the south side) an access road, car park, pressure reduction station and waste ground in the northern part of the gasworks site.

### Past impacts

Railway elevated on embankment; it is likely that topsoil was stripped in advance of construction. Good survival would be expected in the playing fields to the north although BGS mapping shows worked ground within the site area at the junction of Jutsums Lane and the works site. Land in the gas works would have been disturbed and contaminated by a coking plant (demolished in 1970) and by other structures and services associated with the gas works.

Former quarries are also likely beneath the existing sidings. The 1881 Ordnance Survey shows a quarry between Jutsums Lane and the railway embankment, on the south side and also a series of large ponds referred to as ‘the Gutlet’ on both sides of the railway, at the east end of the Crossrail, west of Waterloo Road. The latter fall partly within the proposed depot, but mainly affect the stabling sidings east of Nursery Walk. They may also be former gravel pits and have since been filled in.

### Importance of the baseline resources

- **High importance: low potential** for *in situ* Palaeolithic remains. *Reasons*: national rarity. Redeposited remains would be of low importance.

- **Moderate importance: moderate potential** for later prehistoric remains. *Reasons*: formal designation within an Archaeological Priority Zone; if *in situ*: local rarity and group value with crop marks and other sites.

- **Moderate importance: low potential** for Roman occupation and infrastructure, increasing to **moderate potential** in the eastern c 600m to 800m of the Crossrail site. *Reasons*: formal designation within an Archaeological Priority Zone, supporting data from other nearby sites; and contribution to published priorities (eg Museum of London 2002, 82).

- **Moderate importance: low potential** for Saxon features such as ditches: *Reasons*: formal designation within an Archaeological Priority Zone, local rarity and contribution to published priorities (eg Museum of London 2002, 47), but dispersed activity with low probability of being present.
• **Moderate importance:** the existing mid 19th-century railway underbridge within the core of the subway at Nursery Walk. *Reasons:* historical associations with Eastern Counties Railway of 1838, and supporting data. *It is unlikely that there would be an impact upon this structure in the centre of the embankment.*

• **Low importance:** *moderate potential* for medieval and post-medieval agricultural remains. *Reasons:* limited potential to contribute to published priorities (eg Museum of London 2002, 58). The site lies generally in a formerly rural landscape, outside the historic nucleus of Romford, but if settlement remains were present, they are likely to be of *moderate importance.*

• **Low importance:** *high potential* for below-ground remains of late 19th-century gasworks. *Reasons:* limited potential to contribute to published priorities.

• **Low importance:** *surviving* foundations for the unfinished Crowlands station and the redundant steel overbridge at Nursery Walk (formerly part of the gas works rail link); all of late 19th- or 20th-century date. *Reasons:* limited potential to contribute to published priorities.

### Impact

**General:** there would be extensive enabling, temporary and permanent ground works along the length of the site, namely: relocation of existing facilities eg West Ham Football Club sports centre, OHLE depot and gasworks infrastructure; preparatory demolition and land clearance (including removal of contaminated overburden); ground water control; diversion of utilities (including electrical substations and high pressure gas mains); four construction compounds (worksites); access roads; embankment widening and other earthworks; retaining walls; perimeter fencing and landscaping.

**Western area:** a major railway dive-under (underpass) through the Great Eastern Main Line (GEML) embankment, including approach ramps; new bridge over Jutsums Lane and reinstatement works.

**Eastern area:** substantial new maintenance depot and extension of existing sidings, including ancillary works (such as carriage washers and other local structures at embankment level and the extension of a pedestrian underpass) and a separate Route Control Centre.

• Preparatory **demolition and land clearance** including removal of - trees and vegetation; contaminated overburden in the northern part of the present gasworks and redundant railway track and structures. These works are relatively superficial, but may partially truncate any archaeological remains presently surviving at shallow depths, but only where they occur away from the embankment, at ground level.

• Extensive **earthworks** along the length of the site, especially for embankment widening. New embankments would probably involve soil stripping and be founded directly onto terrace gravel or London Clay. In one area an existing earth ramp is to be removed and a new disabled access route provided. Preparatory stripping of
contaminated soil is also required within the gasworks area. These works may partially or completely remove potential archaeological remains, with the exception of those deep within the terrace gravels, at the following locations:

○ South of the embankment, west and east of Jutsums Lane, continuing eastwards into the northern part of the gasworks, as far east as Nursery Walk (RW NE8 & NE9).

○ North of the embankment, between Whalebone Lane South Bridge and Westlands Playing Field (RW NE8).

• Extensive reinforced concrete retaining walls to support the new embankments along length of site (likely to be c 450mm thick on piled foundations). These would completely remove potential archaeological deposits at the dive-under (see below) and at the following locations:

  ○ Supporting the new stabling sidings, to the north and east of the depot building (see below).

  ○ Along the widened embankment approaching the new depot (south side of the GEML)

  ○ Adjacent to existing embankments to the west of box casting site.

• Extensive landscaping along the length of the site, entailing the planting of trees and hedges to create screens and, especially along the boundary with Westlands Playing Fields, the boundaries of the depot (off Crow Lane, Sandgate Close and Nursery Walk) and places where the facility abuts residential areas. A noise barrier will probably require the construction of a timber fence. Some of the landscaping works, in particular excavation for tree planting, are likely to partially remove or damage potential archaeological remains.

• Dive-under (RW NE8): a new rail underbridge beneath the existing embankment, comprising a concrete box c 40m long, 17.5m wide and 7.5m deep, with cuttings forming approach ramps on either side, flanked by secant piled retaining walls. Formation level would be c 9.5m OD, compared to present ground level of c 15 to 16m OD; ie it would be at or below the base of the terrace gravels (HBDR dwg no 1D0600-E1D17-R00-P-00100 Rev A).

  ○ The dive-under box is a pre-cast concrete structure built separately, before being slid/jacked into place through the existing embankment. It would be built from an off-line temporary works area alongside the northern approach ramp, within the Westlands playing field. This would consist of a below-ground cofferdam or cutting, c 70m by 20m, with contiguous-piled retaining walls, excavated to the dive-under formation level (as above). It would completely remove potential archaeological remains within its footprint (including potential Palaeolithic remains within the terrace gravels).
The impact of permanent approach ramps on either side of the existing embankment would vary between partial and complete removal of potential archaeological remains over a distance of c 300m.

Temporary cable bridges spanning 50m to carry services over excavations for the dive-under box (RW NE8). These would be supported on Screwfast foundation piles that would displace and compact any archaeological deposits within their footprints (assuming that they penetrate below the embankment) effectively removing the information value of those deposits.

Dewatering may be required during the construction of the dive-under box, which might entail pumping from bored well points to lower the water table in the Terrace Gravel. Any impact cannot presently be quantified, but there are no known archaeological resources in the vicinity. Similarly, although a former stream course crosses the site at this point, it is not known to be associated with alluvial deposits or organic preservation that might be affected by dewatering.

A local pump station, and possibly a reservoir, will be required at the portal on the south side of the dive-under. The impacts of these works will not be determined in detail within the timescale of the EIA, but they will require excavation below existing ground level. They are therefore likely to partially or completely remove potential archaeological remains.

Replacement sports facilities east of Whalebone Lane South (RW NE8). Relocation of sports building on south side of West Ham Football Club training ground (existing to be demolished) and reinstatement of all-weather sports pitches within Westlands playing fields to the east. Likely to require pad and/or piled foundations, new services and access (building) and ground reduction, sub-base/drainage for all weather sports pitches. Details of these works will not be available within the timescale of the EIA, but they are likely to partially or completely remove any archaeological features not affected by previous Crossrail temporary works in the vicinity (e.g. cutting for dive-under box construction, above, and Westlands construction compound, below).

Jutsums Lane Bridge (RW NE8). A new Crossrail bridge over Jutsums Lane (c 40m south of the existing GEML underbridge) to provide access into the depot. The reinforced concrete abutments, probably with piled foundations, would completely remove potential archaeological deposits within their footprints. It is currently considered feasible to achieve the specified headroom without lowering the highway, but should that prove necessary an additional archaeological impact may occur, depending upon formation levels.

Widening of the railway embankment on the south side requires a corresponding extension of the existing pedestrian underpass (subway) beneath it, at Nursery Walk, using pre-cast arches on
reinforced concrete abutments, supported on piled foundations (RW NE9). The redundant gasworks overbridge would be demolished. There would also be a new road and bridge (over Nursery Walk) to provide vehicular access from ground level up to the new embankment stabling sidings (below). These works would partially or completely remove potential archaeological deposits within the footprints of the new foundations, and remove the redundant overbridge. They are unlikely to have a physical impact on the original railway underbridge in the core of the existing underpass, or on remains of the unfinished Crowlands Station.

- Maintenance depot and stabling sidings (RW NE9). Maintenance depot: a single substantial building c 260m by 70m, plus associated offices, stores and welfare facilities on the south side. The majority will be engineering workshops constructed at GEML level: by infilling and raising part of the former gasworks site, in order to extend the existing embankment southwards. However, beneath the offices on the south side, an area will be retained at existing street level in order to create an undercroft for plant, services and parking.
  - The depot will be a steel framed building. Although foundation details are not yet available piling is likely, using vibro-compacted rubble or bored concrete piles (particularly where close to the main line).
  - There will be further delivery, storage and parking areas at ground level outside the depot building to the south, and Nursery Walk would be upgraded as the main access road to it. These elements are likely to require ground reduction, sub-base and services.

**Impact:** the above works will partially or completely remove any archaeological remains presently surviving.

  - To the north-east, between the new depot and the GEML, the existing embankment-level sidings would be enlarged to create stabling for Crossrail trains. Infilling to extend the earthworks will have no impact on archaeological deposits (*but see also the access road and retaining walls, above*).

  - On the tracks approaching the depot and stabling from the west, (along the widened embankment) would be several much smaller structures such as a carriage wash plant (RW NE8), wheel lathe facility, carriage paint shed, and train driver and cleaner facilities, plus relocated railway maintenance contractor’s compound. These structures are all at embankment level and only the wash plant tanks (c 3 to 4m deep) might have a localised impact on archaeological deposits beneath it.
- A cement bentonite **slurry wall cut-off** may be required around the perimeter of the depot site to prevent the migration of contamination. This would entail the excavation of a trench through the Terrace Gravel into the London Clay. The **impact** of this would be to completely remove potential archaeological deposits, including any Palaeolithic evidence within the terrace gravels.

**Route Control Centre and car parks (RW NE9):**

- The **Route Control Centre** would be a single-storey (probably steel-framed) building, at street level, on derelict former gasworks land west of Sandgate Close. It would include surface car parking around and to the north of it (accessed from the main depot, via Nursery Walk) a security gatehouse off Sandgate Close and perimeter security fencing. Construction design details are not currently available but are likely to include a single storey building, constructed on 1m deep strip foundations; ground reduction, sub-base and services for the car parking and access road; and posts for the fencing. The site will have previously been used for a construction compound (see below). The impact of the permanent works would be to partially or completely remove archaeological deposits locally (where not already affected by the previous temporary uses).

**There would be four extensive construction compounds and associated access roads:**

- Romford Dive-under Worksite North located to the north of the railway, largely on Westlands Playing Field (RW NE8). This area appears to be relatively undisturbed, apart from the laying out of the present sports pitches, and archaeological survival can be expected to be good. Preparatory ground reduction for compound and access road (both depth c 0.5m); batching plant constructed on 0.5m to 1m deep foundations; site offices (foundation depths c 0.4 to 0.8m); perimeter hoarding posts (depth c 0.8 to 1.5m) and possible services would partially or wholly remove potential archaeological remains.

- Romford Dive-under Worksite South located west of Jutsums Lane, south of the railway and including land accessed from Crow Lane. Site offices (foundation depths c 0.4 to 0.8m), perimeter hoarding post footings (depth c 0.8 to 1.5m) and preparatory ground reduction (c 0.5m, over an area c 75m by 50m) would probably partially remove potential archaeological remains (RW NE8).

- Romford Depot Worksite extending east from Jutsums Lane to Waterloo Road. Site offices (foundation depths c 0.4 to 0.8m), perimeter hoarding post footings (depth c 0.8 to 1.5m) and preparatory ground reduction would probably partially remove potential archaeological remains (RW NE8 & NE9).
Romford Route Control Centre Worksite located west of Sandgate Close. Preparatory ground reduction for hard standing (c 0.5m) and welfare facilities buildings (foundation depths c 0.4 to 0.8m) would probably partially remove potential archaeological remains (RW NE9).

- **Construction boundary and Perimeter security fencing**
  (foundation depth assumed 0.8m to 1.5m locally) would either partially or completely remove potential archaeological deposits, but only where not located on the present embankment or other land raising.

- **Surface water drainage proposals** will, where appropriate, utilise existing sewers and incorporate Sustainable Urban Drainage Systems. The latter may include permeable pavements, filter strips, swales, soakaways and infiltration trenches, filter drains, infiltration basins, detention basins, retention ponds, and wetlands. Although details of the type and location of such structures are not yet available, they may entail excavation into the terrace gravel and may therefore partially or completely remove any surviving archaeological remains, locally.

- **Extensive diversion of utilities** will include:
  - Transfer of existing gasworks infrastructure to a new location. Includes demolition and relocation of Transco regional office, yard, pressure reduction station and one gas holder (RW NE9).
  - Diversion of 2m deep high pressure gas mains. New route to run for c 1.75 km; commencing on the north side of the railway at Westlands Playing Field, before crossing beneath it and continuing on the south side to the existing gas works. Open cut construction, apart from where it passes beneath GEML and Jutsum’s Lane. (RW NE8 & NE9).
  - Diversion of the sewer and water main that would be severed by the northern approach to the dive-under (RW NE8).
  - Diversion of 5m deep sewer near Waterloo Road (RW NE9).
  - Diversion of sewer near sports facility off Whalebone Lane South (RW NE8).
  - Relocation of electrical control room, adjacent sub station and high voltage cables (currently at Depot off Jutsums Lane) (RW NE8).

The local ground works excavations for these works, such as service trenches and foundations, would partially or completely remove any surviving archaeological remains.

<table>
<thead>
<tr>
<th>Magnitude of impact before mitigation</th>
<th>High with potential for a Significant impact</th>
</tr>
</thead>
</table>

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### Additional information required?

Consideration of the following, in order to refine the mitigation strategy: the detailed engineering design; survey and geotechnical data and contamination sampling (eg former gasworks site).

### Incorporated Mitigation

The generic data gathering and mitigation measures, as described in the incorporated mitigation, would be applied to this Crossrail site. However, there are specific local areas where there may be non-archaeological constraints on mitigation:

- **Excavation through the existing railway embankment** to allow the pre-cast dive-under box to be moved into place beneath the Great Eastern Main Line. This is critical work planned to take place over a 72 hour possession, in order to keep closure of the operational railway to a minimum and the opportunities for archaeological intervention will therefore be limited. This restriction affects the width of the existing permanent way only (c 40m) and not the associated construction work on either side. Similar restrictions may apply to the impacts of Screwfast piles for a temporary cable bridge.

- There may be health and safety restrictions on archaeological fieldwork within the former gas works, depending upon the level of ground contamination.

Initially, DDBA and/or field evaluation would be required to establish levels of survival, including structural appraisal of the unfinished Crowlands station, the possible original bridge within the core of the subway, and the redundant overbridge at Nursery Walk. Where required, mitigation might include ‘Level 2’ historic building recording (RCHME specification: ‘Recording historic buildings: a descriptive specification’ 3rd edn 1996).

### Residual Impact after incorporated mitigation

Low

Removal without record of any surviving archaeological remains during excavation through the existing embankment, to allow insertion of the dive-under box, over an area c 40m x 17.5m. Removal of information value from potential archaeological remains by individual Screwfast piles for a cable bridge. However, there are no known archaeological remains in this location and the works affect only a very small proportion of the total Crossrail site.

### Site specific mitigation

None considered practical beneath existing embankment in area of dive-under box.

None required elsewhere.

### Residual Impact after site specific mitigation

Low *(as for impact after incorporated mitigation, above)*
<table>
<thead>
<tr>
<th>Significance of Residual Impact</th>
<th>Non-significant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sources</td>
<td></td>
</tr>
<tr>
<td>Engineering sources</td>
<td>Engineering Information provided by Crossrail</td>
</tr>
<tr>
<td>ES Scheme Description</td>
<td></td>
</tr>
<tr>
<td>Historical / Archaeological sources</td>
<td>500m search of GLSMR and LAARC</td>
</tr>
<tr>
<td></td>
<td>Greater London Industrial Archaeology Society (GLIAS) database v.2.65</td>
</tr>
<tr>
<td></td>
<td>Ordnance Survey 1st edition 6”map, 1875</td>
</tr>
<tr>
<td>Researcher</td>
<td>PM, RC, HK, AF, JC</td>
</tr>
<tr>
<td>Date</td>
<td>21/12/04</td>
</tr>
</tbody>
</table>
4.9 Route Window NE9

(NB Site 316 Romford Depot extends into the western half of RW NE9, see RW NE8, above)

4.9.1 Site 309 Romford Station

<table>
<thead>
<tr>
<th>Site name</th>
<th>Romford Station</th>
<th>Site no.</th>
<th>309</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route Section</td>
<td>Shenfield</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location</td>
<td>South Street, Romford, LB Havering</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGR</td>
<td>551240 188405</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposed Works</td>
<td>New station concourse and ticket hall; platform works; construction compounds and utilities.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geology and Topography</td>
<td>The station is located on the east side of the river Rom, at the point where an east–west aligned palaeo-channel joins the main north/south river valley. For this reason it spans several geological boundaries. Beneath the railway embankment, the extreme western end of the station is over alluvium from the Rom valley, followed by Head deposits within the palaeo-channel (west end of platforms). There is then an exposed outcrop of London Clay (central part of platforms) with the majority of the station to the east over Hackney terrace sands and gravels.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Baseline resources

- No Scheduled Ancient Monuments within the search area.
- The majority of the Crossrail site lies within an Area of Archaeological Priority, with the exception of the extensions to Platforms 4 & 5.
- Romford station is a locally listed building.
- High potential for below-ground remains of an early 19th-century gasworks (Romford Station Worksite North). Romford’s first gasworks were established in 1825 by George M. Bell at South Street/Exchange Street (GLIAS database: the exact location and extent is not known). Romford Gas & Coke Co. took over the works in 1847 and relocated to Nursery Walk to the south-west (see Site 316).
- Moderate potential for prehistoric settlement and land use on the terrace gravels eg ditches (Site code: RO-SS89; GLSMR 061705, c 310m south of the Crossrail site); flint artefacts (GLSMR 060029, 060608, 060164, all c 700m away). Crop marks of ring ditch (probable ploughed-out remains of a Bronze Age round barrow) c 650m to the north-west of the site (NGR 549390 188469) and c 525m south of site (NGR 549840 187366). There are extensive undated linear and rectilinear crop marks c 1km to the north-west (NGR 548926 188561), 575–800m to the north-west (NGR 548985 188262, 549162 188345, 549403 188382), c 450m to the north.
(NGR 549685 188492), c 525m to the south (NGR 549840 187366) and c 750m to the south-east (NGR 550455 187499) representing field systems of possible late prehistoric (or later) date. There is also moderate potential for palaeo-environmental evidence, and a low potential for Mesolithic or later prehistoric remains, sealed beneath or within the River Rom alluvium.

- **Moderate potential** for settlement and industry within the medieval and later market town of Romford. The main medieval nucleus was to the north, on the main London-Colchester road, around Market Place and High Street, the market being established c 1250 and St Edward’s chapel in the 15th century (GLSMR 060323, 060330, 060331, 060342, 061070, 061322). There was an earlier settlement (Oldchurch) on South Street, c 310m south of the Crossrail site, around the 12th-century chapel of St Andrew and a gaol (GLSMR 060134, 060136, 060961). Here post-medieval features included a drainage ditch associated with the Rom, and a 16th-century manor house, Stewards, replaced c 1717 by Romford Hall (Site code SUH96; GLSMR 060149, 060230, 062547). Industry was focused on the Rom, which passes through the Crossrail site, including mills and the 19th-century Ind Coope brewery c 200m to the north-west, which by 1908 had its own railway sidings.

- **Moderate potential** for 19th-century railway infrastructure (GLSMR 060361). The Eastern Counties Railway first opened to a temporary wooden terminus at Romford in 1839. The original two tracks form the southern part of the present main line, with the permanent ECR passenger station then principally at embankment level (on its north side) in the present central part of platforms 3/4. The original viaduct can be seen from beneath, inside the (widened) brick arch underbridge across the Rom, at the western end of the station. The complex Victorian configuration appears to have included an earth embankment slope to the north and a brick face (still extant) on the south side. However there were additional brick structures on the northern embankment face (shown in a photograph c 1900) and a subway through the embankment on the east side of the Rom. There was also a separate goods station south of the main line, in the area of the present bus interchange. This is shown on the 1881 Ordnance Survey but no longer survives above ground. The ECR passenger station and embankment slope were largely removed when the railway was widened to four tracks in 1930, by the addition of a viaduct and ticket hall on the north side including a second bridge over South Street. The viaduct comprises open brick arches facing The Battis (with platform 5 above) and a concrete retaining wall behind, supporting the widened embankment. There was a third station to the east, on the south side of the main line in the vicinity of platform 1. It was opened when the London, Tilbury and Southend Railway added a connection to Romford in 1892 and was linked to the western station by a footbridge over South Street (still extant).
• **Low potential** for Palaeolithic remains in the Hackney sands and gravels, or sealed beneath or within Head deposits.

• **Low potential** for Roman activity. Although Romford has been suggested as a Roman settlement, archaeological evidence is largely based on the presence of the Roman road c 300m north of the site and other finds further away in the valley of the Rom (eg RO-WF88). Two rectilinear crop marks c 450m to the north of the site (NGR 549685 188492) are possible settlement enclosures of Late Iron Age/Roman date and some of the undated crop marks listed under prehistoric resources (*above*) could equally be Roman.

• **Low potential** for Saxon landscape features such as ditches (Site code: RO-SS89; GLSMR 061705, 310m south of Crossrail site)

<table>
<thead>
<tr>
<th>Current status of land</th>
<th>Station is on a viaduct, with the entrance at ground level, beneath the northern of the two South Street bridges. The railway formation is at c 22.5m OD, with ground level adjacent rising gradually eastwards, away from the river: from c 15m to 17m OD south of the station and from c 14m to 15m OD on the north side.</th>
<th>Visited ?</th>
<th>Yes</th>
</tr>
</thead>
</table>

| Past impacts | Piers of the railway viaduct will have removed all potential archaeological remains within their footprints (with the possible exception of any Palaeolithic remains deep within the terrace gravels). Between the piers (*ie* under the arches), however, elements of the original landscape may be well preserved. |

| Importance of the baseline resources | • **High importance:** low potential *for in situ* Palaeolithic or Mesolithic remains. *Reasons:* national rarity and potential for *supporting data* on ancient environments (see below). Reworked or redeposited remains would be of low importance.  
• **Moderate importance:** moderate potential *for palaeo-environmental and post-Mesolithic prehistoric settlement and land use,* including associated palaeo-environmental evidence. *Reasons:* local rarity of *in situ* prehistoric remains; potential for reconstruction of past environments, contributing to *published priorities* (eg Museum of London 2002, 20 & 80).  
• **Moderate importance:** low potential *for activity associated with the Roman road,* including agriculture. *Reasons:* as per Site 304, above.  
• **Moderate importance:** low potential *for Saxon activity* *Reasons:* local rarity and contribution to *published priorities* (eg Museum of London 2002, 47).  
• **Moderate importance:** moderate potential *for medieval and later market town of Romford.* *Reasons:* formal designation within an Archaeological Priority Zone; historical *supporting data*; diversity of multi-phase resources; contribution to *published priorities* (eg Museum of London 2002, 58). |
• **Moderate Importance:** *high potential* for below ground remains of Romford’s first gasworks. *Reasons:* rarity in that the gasworks date to 1825 and represent an early example of this particular industry within a national context.

• **Moderate importance:** *moderate potential* for 19th-century railway infrastructure. *Reasons:* group value; supporting *historical data and association*; complexity and diversity of multi-phase resources; contribution to *published priorities* (eg Museum of London 2002, 81). Romford Station formed an original component of the 1839 Eastern Counties Railway (from 1862 the Great Eastern), one of the earliest railways in the world.

### Impact

New station concourse and ticket hall, platform extensions; construction compounds and utilities.

• **New station concourse and ticket hall.** The existing ground level passenger concourse inside the railway viaduct would be opened up and new escalators, stairs and lifts installed to platform level. The concourse area would also be enlarged by taking in the existing ticket hall building on the north side of the railway, which would be demolished. The unified concourse would be linked through to a new ticket hall constructed beyond the railway boundary to the north, incorporating part of the present Battis thoroughfare and properties at 110–116 South Street (which would be demolished). Enabling works include a temporary ticket office outside the viaduct to the south; structures inside it to support the railway level above and a tower crane to the north, all requiring local concrete bases. Although full details are not yet available, permanent works require ground-bearing slab throughout (includes lowering finished level inside the existing concourse by 0.60m); mass concrete strip footings and foundation bases; and lift pits. These would partially or completely remove any surviving archaeological remains. The demolition and opening up within the railway boundary may also affect structural features relating to the multi-phase railway history of the site.

• **Platform extensions.** Platforms 4 and 5 will be extended westwards by 18m. The existing structures on these platforms will be removed, the bridge over the Rom widened at embankment level, and the canopies rebuilt and extended. The extensions are at (elevated) railway level and will span over the river Rom. They will be supported on the existing viaduct to the east and on pad footings within the embankment to the west. **No or minimal impact,** confined to the possibility of historic railway features being encountered.

• **Four construction compounds:**
  ○ Romford Station Worksite West. This large site would be located to the west of the Rom and south of the railway. Works would include demolition of existing structures, provision of accommodation, temporary vehicle bridge over the river and...
access road linking east to Atlanta Boulevard.

- Romford Station Exchange Street Worksite located in the car park on the corner of Exchange Street to the north of the railway.
- Romford Station Worksite South. To the south of the railway, this site would involve use of the bus station concourse (including temporary station offices and bus access road).
- Romford Station Worksite North located to the north of the railway, to the rear of 108 South Street, north of The Battis (including creating a permanent access road from Havana Close).

These sites are at ground level and the associated works, although relatively superficial, may have localised archaeological impacts, eg access roads, footings for accommodation and bridge over the Rom (see also utilities, below).

- **Utilities.** Although details are not yet available, the proposed works will require extensive new and diverted services, particularly for construction of the ticket hall (the majority of existing utilities run beneath South Street and The Battis); for the Havana Close access road (including relocation of electrical substation); and within the bus interchange to the south (protection or diversion of gas main). Any new service trenches will partially or completely remove surviving archaeological remains locally.

<table>
<thead>
<tr>
<th>Magnitude of impact before mitigation</th>
<th>Moderate with potential for a Significant impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional information required?</td>
<td>Consideration of the detailed engineering design and of survey and geotechnical data, in order to refine the mitigation strategy.</td>
</tr>
<tr>
<td>Incorporated mitigation</td>
<td>The generic data gathering and mitigation measures, as described in the incorporated mitigation, would be applied to this Crossrail site. Initially, DDBA and/or field evaluation would be required to establish levels of survival (including structural/railway history appraisal).</td>
</tr>
<tr>
<td>Residual impact after incorporated mitigation</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>The incorporated mitigation measures would constitute preservation-by-record</td>
</tr>
<tr>
<td>Site specific mitigation</td>
<td>Below-ground remains: None required</td>
</tr>
<tr>
<td></td>
<td>Locally listed station: assessment of architectural, visual, and historic qualities in order to determine the appropriate level of recording from those specified by RCHM(E) 1996 (including standing building/railway history appraisal), to constitute preservation by record.</td>
</tr>
<tr>
<td>Residual impact after site specific mitigation</td>
<td>None</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Significance of Residual Impact</td>
<td>Non-Significant</td>
</tr>
<tr>
<td>Sources</td>
<td></td>
</tr>
<tr>
<td>Engineering sources</td>
<td>Engineering Information provided by Crossrail ES Scheme Description</td>
</tr>
<tr>
<td>Historical / Archaeological sources</td>
<td>A 500m radius search of GLSMR Greater London Industrial Archaeology Society (GLIAS) database v.2.65 LB Havering UDP Ordnance Survey 1st edition 25” map, 1871 Ordnance Survey 1st edition 6”map, 1875-81</td>
</tr>
<tr>
<td>Researcher</td>
<td>KT, PM, RC, JC, HK, AF</td>
</tr>
<tr>
<td>Date</td>
<td>21/12/04</td>
</tr>
</tbody>
</table>
4.10 Route Window NE10

4.10.1 Site 310 Gidea Park Station

<table>
<thead>
<tr>
<th>Site name</th>
<th>Gidea Park Station</th>
<th>Site no.</th>
<th>310</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route Section</td>
<td>Shenfield</td>
<td>Window</td>
<td>NE10</td>
</tr>
<tr>
<td>Location</td>
<td>Station road, Gidea Park, LB Havering</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGR</td>
<td>553045 189395</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposed Works</td>
<td>Platform lengthening, construction compound</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geology and Topography</td>
<td>Black Park Thames sands and gravels. Away from station, flat land for surrounding street pattern.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Baseline resources**
- No Scheduled Ancient Monuments within search area.
- The Crossrail site lies within an Area of Archaeological Priority.
- **Low potential** for prehistoric and Roman remains. Although the Area of Archaeological Priority is apparently based on the potential for remains on the terrace gravels, this has yet to be demonstrated in the locality of the Crossrail site.
- **Low potential** for post-medieval buildings and associated activity along 16th-century Balgores Lane, immediately west of the station (GLSMR 060369, 061499: 370m south and 250m west of Crossrail site, respectively).

**Current status of land**
Tracks/platforms are set in cutting c 5.5 to 7m below surrounding street level. Balgores Lane crosses this by means of a raised overbridge. Gidea Park station (originally Squirrels Heath) was a late addition to the GER, as suburban development did not begin here until the end of the 19th century. It opened in 1910, the main ticket hall building being located at ground level, adjacent to the railway on the south side.

**Past impacts**
The railway cutting is too deep for archaeological strata or features to survive. However, the station car park to north and ticket hall and forecourt to south are at ground level, and so Holocene land surfaces in these areas may survive.

**Importance of the baseline resources**
- **Moderate importance**: low potential for prehistoric or Roman activity on the terrace gravels. Reasons: formal designation as an Archaeological Priority Zone, but no evidence from the search area, therefore local rarity.
- **Moderate importance**: low potential for settlement associated with Balgores Lane, a Tudor and later route. Reasons: formal designation within an Archaeological Priority Zone, historical
Crossrail Archaeological Impact Assessment: Shenfield Route Section © MoLAS

<table>
<thead>
<tr>
<th>Impact</th>
<th>Platform extensions and a construction compound, with no or minimal archaeological impact.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Platform extensions: lengthened eastwards by 22m. The foundations would consist of concrete beams supported on c 10m deep piles. As these works are within an existing deep cutting they would have no impact on archaeological remains.</td>
</tr>
<tr>
<td></td>
<td>• Construction compound: Gidea Park Station Worksite in the station car park at ground level, outside the cutting on the north side. The associated ground works for accommodation, plant, temporary services etc would be relatively superficial, not necessitating significant ground works, and so there would be minimal impact.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Magnitude of impact before mitigation</th>
<th>Low, with potential for a Non-significant impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional information required?</td>
<td>Consideration of the detailed engineering design and of survey and geotechnical data, in order to refine the mitigation strategy.</td>
</tr>
<tr>
<td>Incorporated mitigation</td>
<td>Further assessment would be required, as above, probably followed by an archaeological watching brief, because of the low magnitude of impact of the proposed works.</td>
</tr>
<tr>
<td>Residual impact after incorporated mitigation</td>
<td>None</td>
</tr>
<tr>
<td>Site specific mitigation</td>
<td>None required</td>
</tr>
<tr>
<td>Residual impact after site specific mitigation</td>
<td>None</td>
</tr>
<tr>
<td>Significance of Residual Impact</td>
<td>None</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sources</th>
<th>Engineering Information provided by Crossrail ES Scheme Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A 500m radius search of GLSMR and LAARC Greater London Industrial Archaeology Society (GLIAS) database v.2.65 Ordnance Survey 1st edition 6”map, 1881</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Researcher</th>
<th>R W-B, NJE, RC, HK, AF, JC</th>
<th>Date</th>
<th>21/12/04</th>
</tr>
</thead>
</table>

Engineering Information provided by Crossrail ES Scheme Description

A 500m radius search of GLSMR and LAARC

Greater London Industrial Archaeology Society (GLIAS) database v.2.65

Ordnance Survey 1st edition 6”map, 1881

86
4.11 Route Window NE11

4.11.1 Site 315 Gidea Park Sidings

<table>
<thead>
<tr>
<th>Site name</th>
<th>Gidea Park sidings</th>
<th>Site no.</th>
<th>315</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route Section</td>
<td>Shenfield</td>
<td>Window</td>
<td>NE11</td>
</tr>
<tr>
<td>Location</td>
<td>East of Upper Brentwood Road, on the north side of the main line, Gidea Park, LB Havering</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGR</td>
<td>553460 189710</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposed Works</td>
<td>Replacement and extension of existing sidings, to provide eight stabling sidings, including new drainage, extension of a stream culvert, cutting back the edge of the existing cutting on the north side and construction of retaining walls. Enabling works include access road and construction compound</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geology and Topography</td>
<td>The south-western c 150m of the Crossrail site, east of Upper Brentwood Road, overlies Black Park terrace sands and gravels, whereas to the north-east the remainder crosses a substantial palaeo-channel, which includes the extant course of the river Ravensbourne. This channel has cut through the terrace gravels, leaving the underlying London Clay exposed in the south-western and north-eastern parts of the site. In the centre, the main palaeochannel crosses the site from north to south, filled with Head deposits along a c 150–230m length of the site and probably more recent alluvium closer to the present course. Land levels surrounding the Crossrail site reflect the river valley, sloping down gently eastwards from c 31–32m OD to c 28m OD or less in the centre.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Baseline resources   | • No Scheduled Ancient Monuments within the search area. SAM LO109 (a suggested Roman road) lies c 1000m to the north of the Crossrail site, but will not extend to it, and a following recent archaeological evaluation it has been re-interpreted as a post-medieval driveway (Site code RGC02; GLSMR 060273).  
• The south-western c 100m of the Crossrail site lies within an Area of Archaeological Priority.  
• Low potential for in situ Palaeolithic or possibly Mesolithic remains (and moderate potential for associated palaeo-environmental data) sealed within or beneath Head deposits (Palaeolithic) or alluvium (Mesolithic) associated with the Ravensbourne palaeochannel.  
• Low potential for subsequent prehistoric (eg Late Iron Age) and Roman agriculture and settlement (LTE02, located on London Clay). Although relatively little is known from the area, there should be a good background potential on the fertile land of the |
terrace gravels and river valley. The lack of present evidence may simply reflect an absence of modern archaeological fieldwork, in an area of existing (largely suburban) development.

- **Low potential** for medieval/post-medieval settlement of Ardleigh Green, 450m south-east (GLSMR 061299, 062504) and related activity, such as ditches (LTE02, 600m to the east of Crossrail site). Another Archaeological Priority Zone apparently based around the Ardleigh Green settlement lies c. 200m south-east of the Crossrail site.

- **Low potential** for historic railway infrastructure. In 1843 the main engineering works for the Eastern Counties Railway opened at Squirrels Heath with its own sidings, foundry, machine shop and carriage and engine houses. However, it was soon superseded by a larger works at Stratford and from 1854 became a railway supply depot (Romford Factory) manufacturing wagon covers, as shown on the 1881 Ordnance Survey. The depot was on the opposite, southern side of the line outside the Crossrail site. Here, three railway buildings are apparently still extant (GLIAS database) and two are listed (*any potential impacts are considered separately, in the Heritage and Townscape technical report*). The former carriage sidings on the Crossrail site itself are much later, dating from the track widening from Romford to Shenfield, carried out in the 1930s.

### Current status of land

<table>
<thead>
<tr>
<th>Visited ?</th>
<th>Yes</th>
</tr>
</thead>
</table>

The main line and sidings are set within a cutting generally c. 2m below surrounding ground level, but more pronounced on the north side where the face is covered with vegetation including trees. The Ravensbourne flows under the railway in a culvert in the central part of the site.

### Past impacts

The base of the railway cutting would probably be too deep, especially to the north and west, for any archaeological remains to survive, *except those deeply buried within or beneath Head deposits, or alluvium*. However, there would probably be partial survival on the northern slope of the cutting and good survival in those areas outside the cutting on the northern edge of the Crossrail site.

### Importance of the baseline resources

- **High importance: low potential** for *in situ* Palaeolithic or Mesolithic remains within the river valley. *Reasons:* national rarity; and contribution to *published priorities,* (e.g., Museum of London 2002, 20 & 80). Associated palaeo-environmental data would be of *moderate importance.*

- **Moderate importance: low potential** for subsequent prehistoric or Roman agriculture and settlement around the river valley. *Reasons:* rarity of evidence indicates the potential for any *in situ* remains to contribute significantly to understanding of these periods locally; contribution to *published priorities* (e.g., Museum of London 2002, 30).
• **Moderate importance: low potential** for medieval and later settlement of Ardleigh Green or related features. **Reasons:** historical supporting data, but known resources distant from Crossrail site.

• **Moderate importance: low potential** for historic railway infrastructure. **Reasons:** outside the Crossrail site.

### Impact

<table>
<thead>
<tr>
<th>Magnitude of impact before mitigation</th>
<th>Moderate with potential for a <strong>Significant impact</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Creation of larger sidings requires extension of the existing cutting northwards; the installation of a retaining wall to the new face and an access road. There would also be new track works and drainage; utility diversions; extension of the stream culvert and a temporary construction compound.</td>
<td></td>
</tr>
<tr>
<td><strong>Extending the existing cutting edge</strong> northwards (4m deep face on the western edge of the river valley, decreasing to 1.5m in the centre) and installing contiguous <strong>piled retaining walls</strong> (over a total length of c 465m) would completely remove any surviving archaeological remains, with the exception of any deeply buried within or beneath Head deposits, which are likely to be only partially removed.</td>
<td></td>
</tr>
<tr>
<td><strong>New track layout</strong> (including signalling and overhead electrification masts) and <strong>drainage</strong>, (to a general depth of 0.6m–1m). These ground works occur within the existing cutting, and so have a low impact, confined to the possibility of prehistoric remains buried beneath the Head deposits and or within possible alluvium of the Ravensbourne palaeo-channel, particularly around the present stream course where the cutting is shallowest. These would be partially or completely removed.</td>
<td></td>
</tr>
<tr>
<td><strong>Extension of the existing stream culvert</strong> (using reinforced concrete slabs on piled foundations) would partially or completely remove potential archaeological remains within the palaeo-channel.</td>
<td></td>
</tr>
<tr>
<td><strong>Utility diversions</strong> include a gas main, two sewers and two high voltage cables. These ground works would occur within the existing cutting, and so would have a low impact, confined to the possibility of prehistoric remains within the Ravensbourne palaeo-channel which would be partially or completely removed.</td>
<td></td>
</tr>
<tr>
<td><strong>Construction compound:</strong> Gidea Park Sidings Worksite, located in the new cutting (see above). Buildings here would include a two-storey office and a single-storey canteen, the foundations of which would have <strong>no impact</strong> since they would be located in the west half of the worksite over truncated London Clay.</td>
<td></td>
</tr>
<tr>
<td><strong>Access road</strong> from Southend Arterial Road, via existing cul-de-sac to the east of the sidings, with ground reduction of c 0.5m, which may partially remove potential buried archaeological remains.</td>
<td></td>
</tr>
</tbody>
</table>
### Additional information required?

Consideration of the detailed engineering design and of survey and geotechnical data (eg extent of Head and alluvial deposits) in order to refine the mitigation strategy.

### Incorporated mitigation

The generic data gathering and mitigation measures, as described in the incorporated mitigation, would be applied to this Crossrail site. Initially, DDBA and/or field evaluation would be required to establish levels of survival on the northern slope of the existing cutting and outside it.

### Residual impact after incorporated mitigation

**None**

The incorporated mitigation measures would constitute *preservation-by-record*.

### Site specific mitigation

None required

### Residual impact after site specific mitigation

**None**

### Significance of Residual Impact

**Non-significant**

<table>
<thead>
<tr>
<th>Sources</th>
<th>Engineering Information provided by Crossrail ES Scheme Description</th>
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<tr>
<td>Historical / Archaeological sources</td>
<td>A 500m radius search of GLSMR and LAARC</td>
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<td>Greater London Industrial Archaeology Society (GLIAS) database v.2.65</td>
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<td>Ordnance Survey 1st edition 6”map, 1881</td>
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<td></td>
<td>Information from Kathy Taylor, North Woolwich Old Station Museum,</td>
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<td></td>
<td>London, December 2004</td>
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<td></td>
<td>Information from John Watling, Great Eastern Railway Society, London,</td>
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<td></td>
<td>December 2004</td>
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<td>21/12/04</td>
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4.12 Route Window NE12

4.12.1 Site 311 Harold Wood Station

<table>
<thead>
<tr>
<th>Site name</th>
<th>Harold Wood Station</th>
<th>Site no.</th>
<th>311</th>
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<tbody>
<tr>
<td>Route Section</td>
<td>Shenfield</td>
<td>Window</td>
<td>NE12</td>
</tr>
<tr>
<td>Location</td>
<td>Station Road, Harold Wood, LB Havering</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGR</td>
<td>554885 190635</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposed Works</td>
<td>Platform extensions, construction compound.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geology and Topography</td>
<td>Boyn Hill gravel (eastern part of site), and an exposure of the underlying eroded London Clay (western part). The Crossrail site is on the western side of the valley of the Paines Brook/Ingrebourne river system, the present course lying c.350m to the south-east. Away from station, flat land for surrounding street pattern, although adjacent roads rise westwards, to join the approach ramps for the Gubbins Lane overbridge.</td>
<td></td>
<td></td>
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</tbody>
</table>

Baseline resources

- No Scheduled Ancient Monuments or archaeological sites within search area.
- The majority of the Crossrail site lies within two Areas of Archaeological Priority.
- Moderate potential for settlement and agriculture associated with the manorial complex Gubbings, documented from 1507 and possibly of medieval origin (GLSMR 060280, 061493, 061494). The manor house and main farm (Great Gubbings and Little Gubbings) were located between the railway and what is now The Drive, on the west side of Gubbins Lane (200m west of Crossrail main works and 60m south-west of temporary land take). They are shown on the 1881 Ordnance Survey, when the surrounding area was still almost entirely open farmland.
- Low potential for other post-medieval settlement and land use, as reflected in buildings and bridge on Squirrels Heath Road, 410m south of Crossrail site (GLSMR 060442, 061492). However this hamlet around the Ingrebourne crossing is too far from the Crossrail site to be directly relevant.
- Low potential for agriculture and possibly settlement, from the Neolithic to Iron Age and Roman periods. Although relatively little is known from the area, there should be a good background potential on the spur of terrace gravel overlooking the valley of the river Ingrebourne. The Roman road from Londinium to Colchester runs c.550m to the north of the railway at this point. The lack of present evidence may simply reflect an absence of modern
archaeological fieldwork in an area of existing (largely suburban) development.

- **Low potential** for 19th-century railway infrastructure. The original 1868 Harold’s Wood station was on the north side, at the far eastern end of the Crossrail site, as shown on the 1881 Ordnance Survey. It probably lies beneath the present embankment and part of the station car park (having been demolished when two further tracks were subsequently added to the railway on the north side).

### Current status of land

| The land is at grade, with the station and track broadly matching surrounding street level, apart from at the eastern end where a low embankment begins. The present (Edwardian) station is at high level on the north side, adjacent to Gubbins Lane overbridge at the western end of the site. | Visited ? Yes |

### Past impacts

- Railway at grade, so relatively little ground disturbance, apart from track bed. The station car park was a goods yard between 1939 and 1963. The 1881 Ordnance Survey map shows a pond at the western end of the station, where the railway also appears to have been in a slight cutting at that time (prior to its extension).

### Importance of the baseline resources

- **Moderate importance: moderate potential** for post-medieval settlement and land use associated with Gubbings manor house and farm. *Reasons: formal designation* within an Archaeological Priority Zone; historical *supporting data*.

- **Moderate importance: low potential** for other post-medieval land use. *Reasons: historical supporting data*, but known resources distant from Crossrail site.

- **Moderate importance: low potential** for prehistoric settlement and land use. *Reasons: local rarity* of evidence indicates the potential for any *in situ* remains to contribute significantly to understanding of these periods locally.

- **Moderate importance: low potential** for 19th-century railway infrastructure. *Reasons: group value and historical documentation/ association* with the Eastern Counties/Great Eastern Railway (although Harold’s Wood was not one of the original stations).

### Impact

- Platform extensions and a construction compound.

- **Lengthening of platforms** 2/3 and 4 by 38m at the eastern end. The foundations would consist of concrete beams supported on c 10m deep piles. Because the railway is broadly at grade, these ground works are likely to partially or completely remove potential archaeological remains within their footprints.

- **Construction compound:** Harold Wood Station Worksite at the east end of the station car park. **No or minimal archaeological impact:** the associated ground works for accommodation, plant, temporary services etc would be relatively superficial.
<table>
<thead>
<tr>
<th>Magnitude of impact before mitigation</th>
<th>Low with potential for a <strong>significant impact</strong></th>
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<tbody>
<tr>
<td>Additional information required?</td>
<td>Consideration of the detailed engineering design and of survey and geotechnical and data, in order to refine the mitigation strategy.</td>
</tr>
<tr>
<td>Incorporated mitigation</td>
<td>Further assessment would be required, as above, possibly followed by an archaeological watching brief, because of the low impact of the proposed works.</td>
</tr>
<tr>
<td>Residual impact after incorporated mitigation</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>The incorporated mitigation measures, if required, would constitute <em>preservation-by-record</em></td>
</tr>
<tr>
<td>Site specific mitigation</td>
<td>None required</td>
</tr>
<tr>
<td>Residual impact after site specific mitigation</td>
<td>None</td>
</tr>
<tr>
<td>Significance of Residual Impact</td>
<td>Non-significant</td>
</tr>
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</table>

**Sources**

<table>
<thead>
<tr>
<th>Engineering sources</th>
<th>Engineering Information provided by Crossrail ES Scheme Description</th>
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<tbody>
<tr>
<td>Historical / Archaeological sources</td>
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4.13 Route Window NE15

4.13.1 Site 312 Brentwood Station

<table>
<thead>
<tr>
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<th>Brentwood Station</th>
<th>Site no.</th>
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<tbody>
<tr>
<td>Route Section</td>
<td>Shenfield</td>
<td>Window</td>
<td>NE15</td>
</tr>
<tr>
<td>Location</td>
<td>The Parade, Brentwood, Essex (Brentwood District Council).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGR</td>
<td>559450 193050</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proposed Works</td>
<td>Platform extensions and construction compound.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geology and Topography</td>
<td>Claygate beds, mudstone and sandstone. The railway runs along a valley aligned east-west, with the land rising on both sides; from c 76m to 83m OD north of the station and from c 80m to 84m OD to the south.</td>
<td></td>
<td></td>
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</tbody>
</table>

Baseline resources

- A **Scheduled Ancient Monument** the Chapel of St Thomas a Becket, Brentwood (SAM 29398) lies 700m north of Crossrail works and would not be affected by them.

- The local authority has no archaeological priority zones: each site is considered on its merits.

- **High Potential** for 19th-century railway infrastructure. Brentwood was the terminus of the East Counties Railway from 1840 until 1843, when the line was extended to Colchester. The Victorian station entrance was on the south side, in the vicinity of the present platform 1, as shown on the 1881 Ordnance Survey. There were also sidings, an engine shed and turntable on the northern side. This layout is still reflected in the eastern part of the station car park and may extend in truncated form beneath platform 4, as the railway was widened from 2 to 4 tracks in the later 19th century. The present (Edwardian) ticket hall is at high level, adjacent to Warley Hill overbridge.

- **Low potential** for isolated Roman remains (Essex SMR 614; 600m south-east of Crossrail site).

- **Low potential** for medieval and later town of Brentwood, centred 670m north of Crossrail site, along High Street (Essex SMR 527, 18433,19339, 25939–54). Also associated landscape features such as ditches and soil horizons (Site codes EX53132, EX53133; Essex SMR 18224, 780m north of the Crossrail site; and recent excavations BWWR02 & BW11).
### Current status of land

| Past impacts | The railway is in a cutting, with the tracks and platforms generally 4–6m below surrounding land levels. Being former sidings, the station car park on the north side is also at this reduced railway formation level. |

| Visited ? | Yes |

| Importance of the baseline resources | No archaeological remains, with the exception of railway infrastructure, are expected to survive within the railway cutting (which includes the station car park). |

| Impact | Platform extensions and a construction compound. The archaeological impact is confined to potential 19th-century railway features: |

| | **Low potential** for Second World War defences, such as road barriers, spigot mortar emplacements etc, placed to cover the main roads of Brentford (Essex SMR 20246–7; 20253–6; but these are all defences that have been destroyed). These remains are not expected to have been present in the areas of the Crossrail works. |

| | **Moderate importance: low potential** for medieval and later Brentwood, with associated landscapes. Reasons: group value with surviving buildings and other fieldwork; historical supporting data, but known resources distant from Crossrail site. |

| | **Moderate importance: high potential** for railway infrastructure. Reasons: group value and historical association. Brentwood Station formed a component of the Eastern Counties Railway (from 1862 the Great Eastern Railway or GER), which dates to the early 1840s and is one of the earliest railways in the world. |

| | **Moderate importance: low potential** for Second World War defences. Reasons: historical supporting data and associations; group value with other evidence of WWII defences both locally and regionally. These remains are not expected to have been present in the areas of the Crossrail works. |

| | **Low importance: low potential** for isolated Roman remains. Reasons: isolated finds or features with little potential to contribute to published priorities. |

| Magnitude of impact before mitigation | Low, with potential for a significant impact |
### Additional information required?
Consideration of the detailed engineering design and of survey and geotechnical data, in order to refine the mitigation strategy.

### Incorporated mitigation
The generic data gathering and mitigation measures, as described in the incorporated mitigation, would be applied to this Crossrail site. Initially, DDBA and/or field evaluation would be required to establish levels of survival, in particular in the eastern station car park.

### Residual impact after incorporated mitigation
None
The incorporated mitigation measures would constitute *preservation by record*.

### Site specific mitigation
Where possible, impacts on potential below-ground 19th-century railway features within the station car park construction compound (Brentwood Station Worksite) should be prevented by minimising or avoiding ground reduction, e.g. for accommodation footings and hard standing.

### Residual impact after site specific mitigation
None

### Significance of Residual Impact
Non-significant

### Sources
<table>
<thead>
<tr>
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<th>Engineering Information provided by Crossrail ES Scheme Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Historical / Archaeological sources</td>
<td>A 750m radius search of Essex SMR Ordnance Survey 1st edition 25” map, 1872–3 Ordnance Survey 1st edition 6” map, 1881</td>
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</table>
4.14 Route Window NE17

4.14.1 Site 313 Shenfield Station and Turnback Sidings

<table>
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<th>Site name</th>
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<tr>
<td>Route Section</td>
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<td></td>
</tr>
<tr>
<td>Location</td>
<td>Hutton Road, north to Alexander Lane underbridge, Shenfield, Essex (Brentwood District Council).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGR</td>
<td>561250 194800 to 561700 195450</td>
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<td></td>
</tr>
<tr>
<td>Proposed Works</td>
<td>New sidings and retaining walls; platform and bridge works; and construction compounds.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geology and Topography</td>
<td>The station lies at the junction of two palaeo-channels which then continue north-east along the line of the railway. They are cut into the mudstone and sandstone of the underlying Claygate beds and are filled with colluvial Head deposits. The 1881 Ordnance Survey shows an extant stream following the main valley, along the east side of the railway and there may hence be local alluvium (although none is shown on the BGS mapping). Land in the area slopes down generally from c 77m OD to 70m OD within the main river valley along the railway line, the embankment for which maintains the 77m level.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Baseline resources          | • No Scheduled Ancient Monuments within the search area.  
• This local authority has no archaeological priority zones: each site is considered on its merits.  
• **High potential** for a Second World War Spigot Mortar Emplacement, adjacent to the station on the east side of the railway, beside southern wing wall of Rayleigh/Hutton Road underbridge (Essex SMR 20265). This emplacement lies outside the Crossrail works. Four similar emplacements in the search area are now destroyed (Essex SMR 20262–64, 20266), but one probable military building survives (Essex SMR 20267).  
• **Low potential** for Palaeolithic remains (and moderate potential for palaeo-environmental data) sealed within or beneath the Head deposits filling the former stream channels. Although there is no Palaeolithic evidence from the search area, three handaxes found c 1km to the south-west on the Stanmore Gravels suggest some activity.  
• **Low potential** for Roman or medieval activity. The medieval Shenfield hamlet was c 600m west of the Crossrail site on the main Roman road from London to Colchester (Essex SMR 5428). Only unstratified chance finds have been recovered from the search area to date: St Mary Shenfield churchyard (800m to west of Crossrail site) and Thrift Wood (1.6km south of Crossrail site) (Essex SMR 5512, 5513, 8485, 8486). |
## Current status of land

Track/platforms on a substantial embankment c. 3–6 m above surrounding (sloping) street level. The original station ticket hall was at ground level below the embankment on Hutton Road and was built c. 1888, when a new GER loop line to Southend was added on the west side of the main line. It was replaced in the 1970s, although Edwardian platform buildings and canopies remain on the island platform 3/4 and the western platform (5). The railway land north of the station comprises the existing carriage sidings beside the main line, plus the Chelmsford and Southend loop lines, the latter descending from embankment to ground level, before passing under the main line at Hutton Junction north-east of the Crossrail site.

| Visited ? | Yes |

## Past impacts

The railway is elevated, so the original land surface beneath may be relatively undisturbed.

## Importance of the baseline resources

- **High importance: low potential** for in situ Palaeolithic remains, only within or beneath Head deposits. *Reasons:* national rarity and potential for supporting data on ancient environments.

- **High importance: high potential** for Second World War spigot mortar emplacement. *Reasons:* historical supporting data (documentary and photographic), historical association (e.g. with the Home Guard); key feature of local history and characteristic of the period. Local and regional rarity, as the only surviving example in the area); *group value* with other WWII defences both locally and across southern and eastern England. This emplacement lies outside the Crossrail works, immediately to the east of the Hutton Road bridge.

- **Moderate importance: moderate potential** for palaeo-environmental evidence. *Reasons:* as per Site 315, above.

- **Moderate importance: low potential** for Roman, or medieval roadside activity including settlement. *Reasons:* any significant remains would have local rarity, but resources focused to the main road which is some distance from the Crossrail site. Disassociated or residual finds would be of low importance.

## Impact

New sidings and retaining walls; bridge refurbishment; additional station platform; ditch diversion and temporary construction compounds. The railway is raised on an embankment, but there will be significant works at ground level adjacent, where the impact will be to partially or completely remove any surviving archaeological remains.

- **New turnback sidings and retaining walls** north of the station, on railway land west of the main line as far as the Southend loop line. These would form a linear extension of the existing embankment c. 200 m long by 15 m wide, created by infilling behind new retaining walls (415 m total length). The walls would be blockwork supported on mass concrete strip footings 1.5 m deep, but with a piled end wall (15 m). The linear foundations are mainly at ground...
level and will partially or completely remove any surviving archaeological remains. The infilling has no archaeological impact (provided there is no prior reduction or consolidation of the existing ground) and nor do the associated track works, drainage, signalling etc at embankment level.

- **Refurbishment of railway bridges.** It is understood that this will be principally at deck level with no structural works to piers and therefore no archaeological impact (including WWII mortar emplacement beside Rayleigh Road underbridge).

- **New platform and stabling track.** South of the station ticket hall, platform 5 would be widened and one new track added, along the western side of the railway embankment. This would create a new island platform (5/6) with station stabling adjacent and would require the existing embankment to be widened by c 10m over a length of c 205m. These works would be supported by a retaining wall c 140m long at the foot of the existing embankment, constructed on a strip footing c 2m wide over piled foundations. Over the remaining length of the new platform to the south (where the embankment is shallower) widening would be accommodated by re-profiling the existing earthworks. Works on the embankment have no archaeological impact. However, foundations for the new retaining wall occur close to present ground level and would remove any surviving archaeological remains along its length.

- **Ditch diversion.** An open drainage ditch runs along the foot of the embankment to the west of the railway, before passing beneath it in a culvert. It would need to be diverted and the culvert extended for the embankment widening. The new c 1.5m deep ditch and culvert structure may partially or completely remove any surviving archaeological remains.

- **Two construction compounds:**
  - Shenfield Station Worksite would be at ground level, east of Friar’s Avenue. Works for hard standing, footings for accommodation, temporary services etc would partially remove potential archaeological remains.
  - Shenfield Sidings Worksite would be at ground level, in the station car park: a large site north of Hutton Road underbridge on the west side of the railway, between the existing sidings and Hunter Avenue. Provision of a level work area, hard standing, accommodation, temporary services etc would require a c 0.5m ground reduction that would partially remove potential archaeological remains.

| Magnitude of impact before mitigation | Moderate with potential for a Significant impact |
### Additional information required?
Consideration of the detailed engineering design and of survey and geotechnical data (eg extent of Head deposits) in order to refine the mitigation strategy.

### Incorporated mitigation
The generic data gathering and mitigation measures, as described in the incorporated mitigation, would be applied to this Crossrail site. Initially, DDBA and/or field evaluation would be required.

### Residual impact after incorporated mitigation
None
*(assuming that the high importance WWII resource is unaffected by the Crossrail scheme).*

The incorporated mitigation measures would constitute *preservation by record*.

### Site specific mitigation
None required.

### Residual impact after site specific mitigation
None.

### Significance of Residual Impact
Non-Significant.

<table>
<thead>
<tr>
<th>Sources</th>
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<td>KT, PM, RC, JC, HK, AF</td>
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</table>
5 Appendix 1: Site Specific Assumptions

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<th>Assumption</th>
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</thead>
<tbody>
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<td>NE2</td>
<td>Platform extensions will require 10m long piles</td>
</tr>
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<td>Manor Park Station</td>
<td>NE3</td>
<td>Platform extensions will require 10m long piles</td>
</tr>
<tr>
<td>Seven Kings Station</td>
<td>NE5</td>
<td>Platform extensions will require 10m long piles</td>
</tr>
<tr>
<td>Goodmayes Station</td>
<td>NE6</td>
<td>Platform extensions will require 10m long piles</td>
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<td>Chadwell Heath Station</td>
<td>NE7</td>
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<td>Gidea Park Station</td>
<td>NE10</td>
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<td>Brentwood Station</td>
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